

SECTION 1. 329 IAC 10-1-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-1-4 Records and standards for submitted information

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4. (a) Any owner, operator, or permittee required to monitor under this article or by any permit issued under this article, shall maintain all records of all monitoring information and monitoring activities, including:

- (1) the date, exact place, and time of the sampling measurements;
- (2) the sampling methods used;
- (3) the person or persons who performed the sampling or measurements;
- (4) the date or dates analyses were performed;
- (5) the person or persons who performed the analyses;
- (6) the analytical techniques or methods used;
- (7) the results of such measurements or analyses; and
- (8) all quality assurance/quality control documentation.

(b) The owner, operator, or permittee of a solid waste land disposal facility shall record and retain at the facility in an operating record, or, in an alternative location approved by the commissioner, any records required by this article.

(c) All records of monitoring activities required by this article and results thereof shall be retained by the owner, operator, or permittee of a solid waste land disposal facility for three (3) years, unless otherwise specified in this article. The three (3) year period shall be extended:

- (1) automatically during the course of any unresolved litigation between the commissioner and a permittee of a solid waste land disposal facility; or
- (2) as required by the permit conditions.

(d) Information submitted to the department to meet a requirement of this article must meet the following standards:

- (1) All drawings, plans, maps, and documentation must be properly titled.**
- (2) All drawings, plans, and maps must include the following:**
 - (A) The date and author of each drawing, plan, or map.**
 - (B) Documentation of the coordinate system of the drawing, plan, or map, including the following:**
 - (i) Measurement units.**
 - (ii) Datum.**
 - (iii) Identification of the coordinate system that was used such as the Universal Transverse Mercator or the State Plane coordinate system.**
 - (C) A bar scale on each drawing, plan, or map.**
 - (D) Elevations that correlate with United States Geological Survey mean sea level data.**
 - (E) The facility name.**
 - (F) The state regulatory identification number, such as permit number or authorization number.**
 - (G) The facility United States Environmental Protection Agency identification number, if available.**
 - (H) A north arrow.**
 - (I) A map legend.**

(Solid Waste Management Board; 329 IAC 10-1-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1763; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3762)

SECTION 2. 329 IAC 10-1-4.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-1-4.5 Electronic submission of information

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4.5. (a) Electronic submission of information required by this article may be requested by the commissioner. The format and submittal mechanism will be prescribed by the commissioner. Any

information submitted on electronic media also must be submitted as a paper copy or copies as required by this article.

(b) Electronically submitted information must meet the following requirements:

- (1) Section 4 of this rule.
- (2) The submittal deadlines of this article.

(c) In addition to the requirements of subsection (b), submittals of drawings, plans, or maps must meet one (1) of the following requirements:

(1) Be submitted in one of the following coordinate systems:

- (A) Universal Transverse Mercator;
- (B) State Plane coordinate system;
- (C) North American Datum (NAD) 1983 or NAD 1927 that includes a description of the coordinates on the document as annotation or described in a text file included with the drawing, plot plan, or map file. The description must include the following:
 - (i) Measurement units.
 - (ii) Datum.
 - (iii) Identification of the coordinate system.

(2) Provide information regarding the survey coordinate system used to create the drawings, plans or maps, including the following:

- (A) At least two (2), but preferably four (4) or more reference locations, field marked and of at least the third order, on each drawing, plan, or map if the site was surveyed.
- (B) Coordinates for the reference locations in clause (A) should be supplied in either Universal Transverse Mercator or State Plane coordinate system and may be submitted in a separate text file or as annotation on the drawing, plan, or map.
- (C) The degree of accuracy, precision, and the manner in which coordinates in clause (A) were determined for the reference coordinates is documented in a narrative on the drawing, plan, or map or in a metadata file.

(d) In addition to requirements of subsection (b), submittals of sampling and monitoring results must include the following:

- (1) Results of laboratory analyses.
- (2) Results of field measurements, including water elevations and well depths, if applicable.
- (3) Laboratory name.
- (4) Date of the sampling or monitoring event.

(Solid Waste Management Board; 329 IAC 10-1-4.5)

SECTION 3. 329 IAC 10-2-11 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-11 “Aquiclude” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 11. “Aquiclude” means a body of relatively impermeable ~~rock~~ **material** that is capable of absorbing water slowly but does not transmit rapidly enough to supply a well or spring. *(Solid Waste Management Board; 329 IAC 10-2-11; filed Mar 14, 1996, 5:00 p.m.: 19 IR1764)*

SECTION 4. 329 IAC 1-2-41 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-41 “Contaminant” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-11-2-42; IC 13-30-2; IC 36-9-30

Sec. 41. **“Contaminant”** means any of the following:

- (1) Pollutant as defined in the Federal Water Pollution Control Act (33 U.S.C. 1362; as amended November 18, 1988);
- (2) Radioactive material as regulated by the Atomic Energy Act of 1954 (42 U.S.C. 2014; as amended October 24, 1992);
- (3) Solid or hazardous waste as determined by the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.; as effective January 1, 1989);
- (4) Hazardous substance as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 et seq.; as amended November 23, 1988);
- (5) Any toxic substance as determined by the Toxic Substances Control Act (15 U.S.C. 2603 et seq.; as amended October 22, 1986);
- (6) Any commingled waste containing waste as defined in subdivisions (1) through (5); from whatever source that:
 - (A) is injurious to human health, plant or animal life; or property;
 - (B) interferes unreasonably with the enjoyment of life or property; or
 - (C) is otherwise violative of this article.

has the meaning set forth in IC 13-11-2-42. (*Solid Waste Management Board; 329 IAC 10-2-41; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1768*)

SECTION 5. 329 IAC 10-2-41.1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-41.1 “Conterminous” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 41.1. “Conterminous” means contained within the same ~~boundaries~~; **common boundary**. (*Solid Waste Management Board; 329 IAC 10-2-41.1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1769*)

SECTION 6. 329 IAC 10-2-63.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-63.5 “Electronic submission” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 63.5. “Electronic submission” means any submission of information to IDEM via electronic media. Such media may include the following:

- (1) Magnetic storage tape or disk.
- (2) Compact disc read-only memory (CD-ROM).
- (3) Electronic mail and /or attachments.
- (4) File transfer protocol (FTP).
- (5) Hypertext transfer protocol (HTTP).

(*Solid Waste Management Board; 329 IAC 10-2-63.5*)

SECTION 7. 329 IAC 10-2-64 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-64 “Endangered species” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 64. “Endangered species” ~~has the meaning set forth in~~ **means any species listed as endangered or threatened under rules of the natural resource commission at 312 IAC 9-3-19, 312 IAC 9-4-14, 312 IAC 9-5-4, and 312 IAC 9-6-9, or 312 IAC 9-9-4.** (*Solid Waste Management Board; 329 IAC 10-2-64; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1771*)

SECTION 8. 329 IAC 10-2-66.1 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-66.1 “Erosion” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 66.1. “Erosion” means the detachment and movement of soil, sediment, or rock fragments by water, wind, ice, or gravity. (Solid Waste Management Board; 329 IAC 10-2-66.1)

SECTION 9. 329 IAC 10-2-66.2 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-66.2 “Erosion and sediment control measure” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 66.2. “Erosion and sediment control measure” means a practice, or a combination of practices, to control erosion and resulting sedimentation. (Solid Waste Management Board; 329 IAC 10-2-66.2)

SECTION 10. 329 IAC 10-2-66.3 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-66.3 “Erosion and sediment control system” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 66.3. “Erosion and sediment control system” means the use of appropriate erosion and sediment control measures to minimize sedimentation by first reducing or eliminating erosion at the source, and then as necessary, trapping sediment to prevent it from being discharged from or within a project site. (Solid Waste Management Board; 329 IAC 10-2-66.3)

SECTION 11. 329 IAC 10-2-69 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-69 “Facility” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 69. “Facility” may consist of one (1) or more permitted processing, storage, disposal, or operational units used for processing, storing in conjunction with processing or disposal, or disposing of solid waste. The term includes:

- (1) all conterminous land and structures related to the permit **within the facility boundary**;
- (2) other appurtenances related to the permit; and
- (3) improvements on the land related to the permit.

(Solid Waste Management Board; 329 IAC 10-2-69; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1772)

SECTION 12. 329 IAC 10-2-74 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-74 “Flood plain” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 74. “Flood plain” means the areas adjoining a river, stream, or lake that are inundated by the base flood. ~~as determined by 340 IAC 6-~~ (Solid Waste Management Board; 329 IAC 10-2-74; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1772)

SECTION 13. 329 IAC 10-2-75 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-75 "Floodway" defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 75. "Floodway" means the channel of a river or stream and those portions of the flood plain adjoining the channel that are reasonably required to efficiently carry and discharge the peak flow ~~from of~~ the base flood. ~~as determined by 310 IAC 6. (Solid Waste Management Board; 329 IAC 10-2-75; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1772)~~

SECTION 14. 329 IAC 10-2-75.1 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-75.1 "Floodway fringe" defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 75.1. "Floodway fringe" means any area of flood plain that has not been adequately protected from flooding by the base flood by means of dikes, levies, reservoirs, or other similar works. *(Solid Waste Management Board: 329 IAC 10-2-75.1)*

SECTION 15. 329 IAC 10-2-96 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-96 "Infectious waste" defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 96. "Infectious waste" has the meaning set forth in ~~the rules of the state board of health at 410 IAC 1-3-10, as supported by the ancillary definitions of 410 IAC 1-3. and applies to facilities regulated under 410 IAC 1-3.~~ *(Solid Waste Management Board; 329 IAC 10-2-96; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1775; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2045)*

SECTION 16. 329 IAC 10-2-97.1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-97.1 "Insignificant facility modification" defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 97.1. "Insignificant facility modification" means the following:

- (1) Relocation of a solid waste land disposal facility waste hauling road.
- (2) Relocation of office buildings.
- (3) Changes in sequences of filling in permitted areas.
- (4) Installation of temporary sediment control measures.
- (5) Installation of leachate control systems to prevent leachate migration off-site.
- (6) Installation of additional methane venting wells to an approved system.
- (7) Installation of weighing scales.
- (8) Replacement of a **ground water** monitoring well **or piezometer** no more than ~~ten (10)~~ **fifteen (15)** feet horizontally from the original location and at an equal depth.
- (9) An alternative daily cover (ADC) under 329 IAC 10-20-14.1(c).
- (10) Approvals granted under 329 IAC 10-21 unless the commissioner determines otherwise.
- (11) ~~Any modification to the solid waste land disposal facility that the commissioner determines will improve the operation of the facility without significantly altering the approved solid waste land disposal permit.~~ **Alternative storage methods for salvaged and recycled materials under 329 IAC 10-20-6(b).**
- (12) An ADC under 329 IAC 10-20-14.1(d).
- (13) Improvements to drainage at the facility **or modifications to sediment controls.**

(14) Changes in the frequency that collection containers regulated under 329 IAC 10-20-4(g)(1) and 329 IAC 10-20-4(g)(2) must be emptied.

(15) Any modification to the solid waste land disposal facility that the commissioner determines will improve the operation of the facility without significantly altering the approved solid waste land disposal permit.

(Solid Waste Management Board; 329 IAC 10-2-97.1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1775; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2746; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3765)

SECTION 17. 329 IAC 10-2-99 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-99 “Karst terrain” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 99. “~~Karst terrains~~ **karst terrain**” means an area where karst topography, ~~with its~~ **including the** characteristic surface and subterranean features, ~~is has~~ developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present ~~to in~~ karst terrains include any of the following:

- (1) Sinkholes.
- (2) Sinking streams.
- (3) Caves.
- (4) Large springs.
- (5) Blind valleys.

(Solid Waste Management Board; 329 IAC 10-2-99; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1775)

SECTION 18. 329 IAC 10-2-100 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-100 “Land application unit” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 100. “Land application unit” means an area where waste is applied onto or incorporated **or injected** into the soil surface excluding manure spreading operations, for agricultural purposes. *(Solid Waste Management Board; 329 IAC 10-2-100; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1775)*

SECTION 19. 329 IAC 10-2-105.3 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-105.3 “Licensed professional geologist” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 25-17.6-1-6.5; IC 36-9-30

Sec. 105.3. “Licensed professional geologist” means a person who is licensed as a geologist by the state under IC 25-17.6-1-6.5. *(Solid Waste Management Board; 329 IAC 10-2-105.3)*

SECTION 20. 329 IAC 10-2-106 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-106 “Liquid waste” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 106. “Liquid waste” means any waste material that contains free liquids as determined by Method ~~9095~~ **9095A** (Paint Filter Liquids Test), as described in ~~“Test Methods for Evaluating Solid Waste, Physical/Chemical Methods”~~, U.S. EPA Publication SW-846 (~~Third Edition, November 1986, as amended by Updates 1 (July 1992), 2 (September 1994), 2A (August 1993), and 2B (January 1995).~~ *(Solid Waste Management Board; 329 IAC 10-2-*

106; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1776)

SECTION 21. 329 IAC 10-2-109 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-109 “Major modification of solid waste land disposal facilities” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 109. “Major modification of solid waste land disposal facilities” means any increase in a permitted solid waste land disposal facility that would:

- (1) increase the permitted capacity to process or dispose of solid waste by the lesser of:
 - (A) more than ten percent (10%); or
 - (B) five hundred thousand (500,000) cubic yards; or
- (2) ~~change~~ **increase** the permitted solid waste boundary by more than one (1) acre.

(Solid Waste Management Board; 329 IAC 10-2-109; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1776; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3766)

SECTION 22. 329 IAC 10-2-111.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-111.5 “Measurable storm event” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 111.5. “Measurable storm event” means a precipitation event, which results in a total measured precipitation accumulation equal to, or greater than, one-half (0.5) inch of rainfall. (Solid Waste Management Board; 329 IAC 10-2-111.5)

SECTION 23. 329 IAC 10-2-112 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-112 “Minor modification of solid waste land disposal facilities” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 112. (a) “Minor modification of solid waste land disposal facilities” means any increase in a permitted solid waste land disposal facility that would not:

- (1) increase the facility’s permitted capacity to dispose of solid waste by the lesser of:
 - (A) more than ten percent (10%); or
 - (B) five hundred thousand (500,000) cubic yards;
- (2) change the permitted solid waste boundary by more than one (1) acre;
- (3) include those items determined to be insignificant modifications by 329 IAC 10-3-3(b) or by the commissioner; or
- (4) include those items determined to be major modifications by section 109 of this rule.

(b) The term includes:

- (1) an alternative daily cover (ADC) under 329 IAC 10-20-14.1(e); ~~and~~
- (2) a baled waste management plan under 329 IAC 10-20-31(3); ~~and~~
- (3) **a borrow pit:**
 - (A) **owned by the facility;**
 - (B) **not previously permitted by the department on the latest effective date of this section; and**
 - (C) **located on-site or on property adjoining the facility.**

(Solid Waste Management Board; 329 IAC 10-2-112; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1777; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3766)

SECTION 24. 329 IAC 10-2-121.1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-121.1 “Nonmunicipal solid waste landfill unit” or “non-MSWLF unit” defined

Authority: IC 13-14-8-7; IC 13-15-2; IC 13-19-3

Affected: IC 13-11-2; IC 36-9-30

Sec. 121.1. “Nonmunicipal solid waste landfill unit” or “non-MSWLF unit” means a discrete area of land or an excavation that is permitted to receive general types of solid waste, excluding municipal solid waste as defined in section 115 of this rule and hazardous waste regulated by 329 IAC 3.1, for disposal and that is not a land application unit, surface impoundment, injection well, or waste pile. ~~as those terms are defined in 40 CFR 257.2.~~ Such a landfill unit may be publicly or privately owned. A nonmunicipal solid waste landfill unit may be a new nonmunicipal solid waste landfill unit, an existing nonmunicipal solid waste landfill unit, or a lateral expansion. *(Solid Waste Management Board; 329 IAC 10-2-121.1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1765; filed Jan 9, 1998, 9:00 a.m.: 21 IR 1703, eff one hundred eighty (180) days after filing with the secretary of state; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3767)*

SECTION 25. 329 IAC 10-2-132.2 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-132.2 “Peak discharge” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 132.2. “Peak discharge” means the maximum rate of flow during a storm, usually in reference to a specific design storm event. *(Solid Waste Management Board; 329 IAC 10-2-132.2)*

SECTION 26. 329 IAC 10-2-132.3 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-132.3 “Permanent stabilization” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 132.3. “Permanent stabilization” means the establishment, at a uniform density of ninety percent (90%) across the disturbed area, of vegetative cover or permanent nonerosive material that will ensure the resistance of the soil to erosion, sliding, or other movement. *(Solid Waste Management Board; 329 IAC 10-2-132.3)*

SECTION 27. 329 IAC 10-2-142.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-142.5 “Preliminary exceedance” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 142.5. “Preliminary exceedance” means the statistically significant increase in concentration of any constituent prior to the increase being verified under 329 IAC 10-21-8. *(Solid Waste Management Board; 329 IAC 10-2-142.5)*

SECTION 28. 329 IAC 10-2-147.2 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-147.2 “Qualified professional” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 147.2. “Qualified professional” means, regarding only 329 IAC 10-15-12 and 329 IAC 10-20-11, an individual who has experience and training in storm water management techniques and related fields as may

be demonstrated by state registration, professional certification, experience, or completion of course work that enable the individual to make sound, professional judgments regarding storm water control or treatment and monitoring pollutant fate and transport, and drainage planning. (*Solid Waste Management Board; 329 IAC 10-2-147.2*)

SECTION 29. 329 IAC 10-2-158 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-2-158 “Responsible corporate officer” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 25-31; IC 36-9-30

Sec. 158. “Responsible corporate officer” means a president, secretary, treasurer, or any vice president of the corporation **or division** in charge of a principal business function that includes the activity to be permitted. (*Solid Waste Management Board; 329 IAC 10-2-158; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1782*)

SECTION 30. 329 IAC 10-2-165.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-165.5 “Sedimentation” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 165.5. “Sedimentation” means the settling and accumulation of unconsolidated sediment carried by storm water run-off. (*Solid Waste Management Board; 329 IAC 10-2-165.5*)

SECTION 31. 329 IAC 10-2-172.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-172.5 “Soil and Water Conservation District” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 172.5. “Soil and Water Conservation District” or “SWCD” means a political subdivision established under IC 14-32. (*Solid Waste Management Board; 329 IAC 10-2-172.5*)

SECTION 32. 329 IAC 10-2-181.2 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-181.2 “Storm water discharge” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 181.2. “Storm water discharge” means the release or flow of storm water which leaves the facility’s property or enters a water of the state. (*Solid Waste Management Board; 329 IAC 10-2-181.2*)

SECTION 33. 329 IAC 10-2-181.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-181.5 “Storm water pollution prevention plan” or “SWP3” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 181.5. “Storm water pollution prevention plan” or “SWP3” means a written plan to minimize the impact of storm water pollutants, resulting from construction and landfill operation activities. (*Solid Waste Management Board; 329 IAC 10-2-181.5*)

SECTION 34. 329 IAC 10-2-181.6 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-181.6 “Storm water quality measure” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 181.6. “Storm water quality measure” means a practice, or a combination of practices, to control or minimize pollutants associated with storm water run-off. (Solid Waste Management Board; 329 IAC 10-2-181.6)

SECTION 35. 329 IAC 10-2-187.5 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-2-187.5 “Temporary stabilization” defined

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 187.5. “Temporary stabilization” means the covering of soil to ensure its resistance to erosion, sliding, or other movement. The term includes vegetative cover, anchored mulch, or other nonerosive material applied at a uniform density of seventy percent (70%) across the disturbed area. (Solid Waste Management Board; 329 IAC 10-2-187.5)

SECTION 36. 329 IAC 10-3-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-3-1 Exclusions; general

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-14; IC 13-19-3; IC 13-20; IC 36-9-30

Sec. 1. The following solid waste management activities are not subject to the provisions of this article:

- (1) Disposing of only uncontaminated rocks, bricks, concrete, road demolition waste materials, or dirt.
- (2) Land application activities regulated ~~by 327 IAC 6 under rules of the water pollution control board at 327 IAC 6.1 and 327 IAC 7.~~ **327 IAC 7.1.**
- (3) Confined feeding control activities regulated ~~by IC 13-18-10.~~ **under 327 IAC 16.**
- (4) Wastewater discharge activities regulated ~~by~~ **under rules of the water pollution control board at 327 IAC 5.**
- (5) Solid waste management activities regulated ~~by~~ **under 329 IAC 11.**
- (6) Disposal of saw dust which is derived from processing untreated natural wood ~~uncontaminated and untreated natural growth solid waste including tree limbs, stumps, leaves, and grass clippings.~~
- (7) ~~The Disposal of coal ash, transported by water, into an ash pond which has received a water pollution control facility construction permit under 327 IAC 3 saw dust derived from processing untreated natural wood.~~
- (8) ~~The operation of surface impoundments; however, the final disposal of solid waste in such facilities at the end of their operation is subject to approval by the commissioner except as excluded under subdivisions (7) and (9):~~ **disposal of coal ash, transported by water, into an ash pond which has received a water pollution control facility construction permit under rules of the water pollution control board at 327 IAC 3.**
- (9) ~~The disposal of coal ash at a site receiving a total of less than one hundred (100) cubic yards per year from generators who each produce less than one hundred (100) cubic yards per year: operation of surface impoundments; however, the final disposal of solid waste in such facilities at the end of their operation is subject to approval by the commissioner except as excluded under subdivisions (8) and (10).~~
- (10) ~~Uses and~~ **The disposal of coal waste as exempted from regulation in IC 13-19-3: ash at a site receiving a total of less than one hundred (100) cubic yards per year from generators who each produce less than one hundred (100) cubic yards per year.**
- (11) ~~The legitimate use of iron and steelmaking slags including the use as a base for road building; but not including use for land reclamation except as allowed under subdivision (13): uses and disposal of coal waste as exempted under IC 13-19-3-3.~~
- (12) ~~The legitimate use of foundry sand which has been demonstrated to the satisfaction of the commissioner as suitable for restricted waste site type HH under the provisions of 329 IAC 10-9-4; including the use as a base for~~

road building, but not including use for land reclamation except as allowed under subdivision (13). **Activities concerning wastes containing polychlorinated biphenyls (PCBs) regulated under 329 IAC 4.1, except those regulated as alternative daily cover under 329 IAC 10-20-14.1.**

(13) Other uses of solid waste may be approved by the commissioner if the commissioner determines them to be legitimate uses that do not pose a threat to public health and environment. **Storage, transportation and processing of used oil as regulated under 329 IAC 13.**

(14) **The legitimate use of slag under IC 13-19-3-8.**

(15) **The legitimate use of foundry sand under IC 13-19-3-7.**

(16) **Any other use of solid waste approved by the commissioner based on the commissioner's determination that the use is a legitimate use that does not pose a threat to public health or the environment.**

(Solid Waste Management Board; 329 IAC 10-3-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1795; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2749; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3771)

SECTION 37. 329 IAC 10-3-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-3-2 Exclusion; hazardous waste

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-14; IC 13-30; IC 36-9-30

Sec. 2. (a) Hazardous wastes are regulated by and shall be treated, stored, and disposed of in accordance with 329 IAC 3.1. Hazardous waste that is regulated by 329 IAC 3.1 is not subject to the provisions of this article.

(b) No hazardous waste that is regulated by 329 IAC 3.1 shall be disposed at any solid waste land disposal facility regulated under this article.

(c) As used in this article, "hazardous waste that is regulated by 329 IAC 3.1" does not include **CESQG** hazardous waste. ~~generated in quantities less than one hundred (100) kilograms per month and is therefore excluded from regulation under the hazardous waste management article, 329 IAC 3.1. Such small quantities of CESQG~~ hazardous waste ~~shall~~ **must only** be disposed of in **a municipal solid waste landfill permitted in** accordance with this article.

(d) Facilities permitted under 329 IAC 3.1 are not required to obtain permits under this article for the storage treatment, or disposal of nonhazardous solid waste where such solid waste is treated or disposed of as a hazardous waste at the receiving hazardous waste facility. *(Solid Waste Management Board; 329 IAC 10-3-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1795; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3776; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535)*

SECTION 38. 329 IAC 10-3-3 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-3-3 Insignificant facility modifications

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-14; IC 13-30; IC 36-9-30

Sec. 3. (a) A permittee of a solid waste land disposal facility proposing insignificant facility modifications may not be required to apply for a minor or a major modification of the current permit from the commissioner. See the definition of insignificant facility modification at 329 IAC 10-2-97.1.

(b) If a permittee proposes or is required to make an insignificant **facility** modification described in 329 IAC 10-2-97.1(1), ~~through 329 IAC 10-2-97.1(2), 329 IAC 10-2-97.1(3), 329 IAC 10-2-97.1(4), and 329 IAC 10-2-97.1(5), 329 IAC 10-2-97.1(6), through 329 IAC 10-2-97.1(7), 329 IAC 10-2-97.1(8), 329 IAC 10-2-97.1(9), or 329 IAC 10-2-97.1(10), 329 IAC 10-2-97.1(12)~~ the permittee shall provide notice to the commissioner ~~via certified mail~~ no later than seven (7) calendar days after the modification has been made. The notice shall include a detailed

description of the project and the date the project was or is expected to be completed.

(c) If the permittee proposes to make an insignificant facility modification described in ~~329 IAC 10-2-97.1(5); 329 IAC 10-2-97.1(10), 329 IAC 10-2-97.1(11), or 329 IAC 10-2-97.1(12)~~, **329 IAC 10-2-97.1(13), 329 IAC 10-2-97.1(14), or 329 IAC 10-2-97.1(15)** the permittee shall submit documentation of the proposed insignificant facility modifications to the commissioner ~~via certified mail~~. The documentation must include a detailed description of the proposed project.

(d) If the commissioner determines that insufficient documentation has been provided to evaluate whether or not the modification under subsection (c) is an insignificant modification, the permittee will be notified in writing within thirty (30) days after receipt of the information to the commissioner that the permittee must submit a new proposal concerning the insignificant modification.

~~(d)~~ (e) If the commissioner determines that the modification under subsection (c) is a major or minor modification, the permittee will be notified in writing within thirty (30) days after receipt of the information to the commissioner that the permittee must submit an application for a minor or major modification to the current permit.

~~(e)~~ (f) If the permittee does not receive notification from the commissioner within thirty (30) days after submission of the proposed modifications to the commissioner, the permittee may initiate the insignificant facility modifications in accordance with documentation provided to the commissioner.

~~(f)~~ (g) No permit modification shall be required for insignificant facility modifications made under this subsection to:

- (1) correct operational violations under this article; or
- (2) protect human health ~~and~~ **or** the environment.

(Solid Waste Management Board; 329 IAC 10-3-3; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1795; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2749; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3776; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535)

SECTION 39. 329 IAC 10-6-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-6-4 Remedial action

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-25-4-7; IC 13-25-4-8; IC 36-9-30

Sec. 4. If the commissioner determines that the closed solid waste land disposal facility is or may be a threat to human health or the environment, due to a release **or threat of release** of contaminants from the solid waste land disposal facility into the environment, the commissioner may proceed under IC 13-25-4 and rules adopted under IC 13-25-4-7 that require the owner, operator, or permittee of a closed solid waste land disposal facility or the owner of real estate upon which a closed solid waste land disposal facility is located, or any other responsible person under IC 13-25-4-8, to perform remedial action, including the installation and monitoring of ground water monitoring wells or other devices **and corrective action under 329 IAC 10-21-13**. *(Solid Waste Management Board; 329 IAC 10-6-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1798; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2751; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3778)*

SECTION 40. 329 IAC 10-10-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-10-1 Applicability

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 1. (a) Unless otherwise addressed in this rule, all MSWLFs and new and existing MSWLF units must comply with applicable requirements in this article after the effective date of this article.

(b) Within ~~one hundred twenty (120)~~ **sixty (60)** days following the effective date of this rule, the owner, operator, or permittee of a MSWLF permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, shall submit any necessary permit modification applications to comply with the requirements of this article. (*Solid Waste Management Board; 329 IAC 10-10-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1807; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2045; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3763*)

SECTION 41. 329 IAC 10-10-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-10-2 Pending applications

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-14; IC 13-20; IC 36-9-30

Sec. 2. A permit application:

(1) that is received on or before ~~June 21, 1995, the date of preliminary adoption of this rule, as amended in 2002~~, will not be required to be revised to meet the requirements of this article; ~~however, the application must comply with 329 IAC 2, which was repealed in 1996, and applicable federal requirements; or~~

(2) that is received after ~~June 21, 1995, the date of preliminary adoption~~ will be required to comply with all applicable requirements of this article **as effective on January 30, 2003.**

(*Solid Waste Management Board; 329 IAC 10-10-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1807; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2751*)

SECTION 42. 329 IAC 10-11-2.1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-11-2.1 Permit application requirements; general

Authority: IC 13-14-8-7; IC 13-15-2-1

Affected: IC 4-21.5-3-5; IC 13-14-11-3; IC 13-20-21; IC 36-7-4; IC 36-9-30

Sec. 2.1. (a) An application for any solid waste land disposal facility permit, including renewals, or for a modification to a solid waste land disposal facility permit, excluding insignificant modifications, must be submitted to the commissioner on permit application forms provided by the commissioner, in a format specified by the commissioner. All narrative, plans, and other support documentation accompanying the application must also be submitted in a format specified by the commissioner.

(b) A complete application must include all of the following information:

(1) The name and address of the applicant.

(2) The name and address of the solid waste land disposal facility site.

(3) The name and address of the solid waste land disposal facility owner, operator, or permittee if different from the real property owner.

(4) The names and addresses of members of the board of county commissioners of a county that is affected by the permit application.

(5) The names and addresses of the mayors of any cities that are affected by the permit application.

(6) The names and addresses of the presidents of town councils of any towns that are affected by the permit application.

(7) The legal description as defined in 329 IAC 10-2-104 for the following:

(A) The solid waste land disposal facility ~~boundaries~~ **boundary**.

(B) If applicable, the solid waste boundary defining the area where the solid waste is to be deposited.

(C) Sufficient documentation must be provided to verify that the waste deposition area is located within the facility boundaries. Documentation must include a map of the legal description for these areas certified by a registered land surveyor.

(8) Solid waste land disposal facility information, including the following:

(A) A description of the type of operation.

(B) The planned **or remaining** life of the solid waste land disposal facility in years.

(C) The expected ~~volume~~ **amount** of waste to be received in tons per operating day ~~and or~~ cubic yards per operating day.

(D) The type of waste to be received.

(9) Signatures and certification statements in compliance with section 3 of this rule.

(10) Disclosure of all good character requirements as described in IC 13-19-4, except for a minor modification.

(c) Five (5) copies of the completed application and all supporting documentation must be submitted to the commissioner as follows:

(1) Sent by registered mail, certified mail, **private carrier**, or delivered in person.

(2) In addition to the paper copies, a copy of the completed application and all supporting documentation may be submitted ~~on digital media by~~ **electronic submission**, the type and format of which will be prescribed by the department.

(3) Plans and documentation accompanying the application shall be submitted as required in 329 IAC 10-15-1(c).

(4) Documentation submitted to the department as required by this article, may be in an electronic format as prescribed by the commissioner. Any documentation submitted in an electronic format also must be submitted as a paper copy or copies as required by this article.

(d) Confidential treatment of information may be requested in accordance with ~~the rules of the solid waste management board~~ **329 IAC 6.1** for ~~all or a portion of~~ the permit application and supporting documents.

(e) All corporations must submit a copy of the certificate of existence signed by the secretary of state.

(f) Fees must be submitted with the application in accordance with IC 13-20-21. (*Solid Waste Management Board; 329 IAC 10-11-2.1; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3788*)

SECTION 43. 329 IAC 10-11-2.5 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-11-2.5 Permit application for new land disposal facility and lateral expansions

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 4-21.5-3-5; IC 13-14-11-3; IC 13-20-21; IC 14-4-5; IC 36-7-4; IC 36-9-30

Sec. 2.5. (a) In addition to the application requirements given at section 2.1 of this rule, a complete application for a solid waste land disposal facility permit or for a major modification of a solid waste land disposal facility permit for a lateral expansion must include all the following information:

(1) Detailed plans and design specifications as required by:

(A) 329 IAC 10-15 through 329 IAC 10-19 and 329 IAC 10-22, as applicable;

(B) 329 IAC 10-24 through 329 IAC 10-27 and 329 IAC 10-30, as applicable; or

(C) 329 IAC 10-32 through 329 IAC 10-35 and 329 IAC 10-37, as applicable.

(2) Closure and post-closure plans as required by:

(A) 329 IAC 10-22-2 and 329 IAC 10-23-3, as applicable;

(B) 329 IAC 10-30-4 and 329 IAC 10-31-3, as applicable; or

(C) 329 IAC 10-37-4 and 329 IAC 10-38-3, as applicable.

(3) The detailed plans and design specifications required by subdivision (1) and the closure and post-closure plans required by subdivision (2) must be certified by a registered professional engineer and must be properly titled.

(4) A description of the financial instrument that will be used to achieve compliance with financial responsibility provisions of 329 IAC 10-39.

(5) Documents necessary to establish ownership or other tenancy, such as an option to purchase, of the real estate upon which the solid waste land disposal facility to be permitted is located. The documentation must include a certified copy of the deed to the subject real estate showing ownership in the person identified as the owner in the application or the deed and evidence satisfactory to the commissioner that ownership will be transferred to the

proper person for purposes of this rule, if not already done, prior to operation of the solid waste land disposal facility.

(6) Documentation that proper zoning approvals have been obtained, including the following, if applicable:

(A) A copy of the zoning requirements, if any, for solid waste facilities in the area where the solid waste land disposal facility is to be located.

(B) A copy of the improvement location permit or occupancy permit issued by the zoning authority having jurisdiction for the site, if a solid waste land disposal facility is permitted by the zoning ordinance in the area where the solid waste land disposal facility is to be located.

(C) A copy of the amendment to the zoning ordinance adopted under IC 36-7-4-901 et seq. if a change in the zone maps is required for the area where the solid waste land disposal facility is to be located.

(D) A copy of the amendment to the zoning ordinance adopted under IC 36-7-4-901 et seq. if such amendment is required for the area where the solid waste land disposal facility is to be located.

(E) A copy of the variance, special exception, special use, contingent use, or conditional use approved under IC 36-7-4-921 et seq. if such approval is required for the area where the solid waste land disposal facility is to be located.

(F) The status of any appeal of any zoning determination as described in clauses (B) through (E), and if none is pending, the date by which the appeal must be initiated.

(7) A United States Geological Survey topographical quadrangle map seven and one-half (7½) minute, or equivalent, to include all areas within two (2) miles of the proposed facility boundaries with property boundaries and proposed solid waste boundaries clearly delineated.

(8) Documentation of the base flood elevation within one-fourth (¼) mile of the proposed facility boundaries.

Either of the following forms of documentation are acceptable:

(A) A letter from the department of natural resources.

(B) A national flood insurance program map.

(9) A scaled map that depicts the following features, **(please note if none exist)**, which are known to the applicant or are discernable from public records, on and within one-half (½) mile of the proposed facility boundaries:

(A) Airports.

(B) Buildings.

(C) City, township, county, state, or national forests or parks.

(D) Coal borings.

(E) Culverts.

(F) Drainage tiles.

(G) Dwellings.

(H) Fault areas.

(I) Floodplains, **floodway fringes, and floodways.**

(J) Gas or oil wells.

(K) Hospitals.

(L) Legal drains.

(M) Nature preserves regulated under IC 14-4-5 or **any critical habitats regulated under 50 CFR 17: as contained in 50 CFR 17.95 or 50 CFR 17.96.**

(N) Pipelines.

(O) Power lines.

(P) Roads.

(Q) Schools.

(R) Sewers.

(S) Sinkholes.

(T) Springs and seeps.

(U) Surface or underground mines.

(V) Swamps.

(W) Water courses or surface water, including reservoirs.

(X) Wells.

(Y) Wetlands.

(10) Potential areas where storm water may enter ground water, such as abandoned wells or sinkholes. Please note if none exist.

(11) Locations of specific points where storm water discharge will leave the facility boundary.

(12) Name of all receiving waters of the storm water discharge. If the discharge is to a separate municipal storm sewer, identify the name of the municipal operator and the ultimate receiving water of the storm water discharge.

~~(10)~~ **(13)** A soil map and related description data as published by the United States Department of Agriculture, Natural Resources Conservation Service.

(14) Current United States Geological Survey (USGS) hydrologic unit code (up to fourteen (14) digits).

~~(11)~~ **(15)** Well logs and a topographic map indicating the location and identifying with respect to the drilling logs, all wells within one (1) mile of the proposed facility boundaries that are on file with the department of natural resources.

~~(12)~~ **(16)** A survey must be conducted for any residences or occupied buildings within one-fourth ($\frac{1}{4}$) of a mile of the proposed facility boundaries that do not have a well log. The survey is to determine whether wells that do not have well logs on file with the department of natural resources are present and obtain any information regarding these wells. A summary of the results of the survey and any information gained must be included with the application.

~~(13)~~ **(17)** The name and address of all owners or last taxpayers of record of property:

(A) located within one (1) mile of the proposed solid waste boundaries of a solid waste land disposal facility; and

(B) of adjoining land that is within one-half ($\frac{1}{2}$) of a mile of the solid waste boundary.

~~(14)~~ **(18)** A signed affidavit to the department agreeing to notify adjoining land owners as required in 329 IAC 10-12-1(b)(1).

~~(15)~~ **(19)** The following information relative to wetlands under 329 IAC 10-16-3 and other waters ~~of the state:~~ **as defined under IC 13-11-2-265:**

(A) A copy of the U.S. Army Corps of Engineers Section 404 of the Clean Water Act permit and a copy of the Indiana department of environmental management Section 401 water quality certification or documentation acceptable to the department that a Section 404 and Section 401 water quality certification are not required.

(B) Any other mitigation plans required by any other government agency including permit conditions or restrictions placed on the siting of the solid waste land disposal facility in relationship to any other waters ~~of the state~~ as defined by 329 IAC ~~10-2-205~~. **under IC 13-11-2-265.**

(b) Restricted waste site Type III and construction/demolition landfills are exempt from submitting the information required in subsection (a)(9). (*Solid Waste Management Board; 329 IAC 10-11-2.5; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3789*)

SECTION 44. 329 IAC 10-11-5.1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-11-5.1 Renewal permit application

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20-21; IC 36-9-30

Sec. 5.1. (a) In addition to the application requirements given at section 2.1 of this rule, **excluding section 2.1(c)(3) of this rule**, a complete application for a renewal of a solid waste land disposal facility permit must include all the following information:

(1) The name and address of all owners or last taxpayers of record of property of adjoining land that is within one-half ($\frac{1}{2}$) mile of the solid waste boundary.

(2) The operation permit number of the solid waste land disposal facility.

(3) ~~The legal description of the solid waste land disposal facility location as defined in 329 IAC 10-2-104.~~ **The number of acres permitted for waste disposal.**

~~(4) Facility information, including the following:~~

(A) A description of the type of operation under 329 IAC 10-9-1.

(B) The number of acres permitted for waste disposal.

(C) The remaining life of the solid waste land disposal facility in years.

(D) The volume of waste received at the solid waste land disposal facility in cubic yards per operating day or tons per operating day.

(E) The type of waste received at the solid waste land disposal facility.

~~(5)~~ (4) A topographic plot plan that reflects the current condition of the solid waste land disposal facility and current elevations taken within ~~six~~ (6) **twelve (12)** months of the submittal of the application and accurately identifying the following information to a scale as required by 329 IAC 10-15-2(a), 329 IAC 10-24-2(a), or 329 IAC 10-32-2(a):

(A) Areas of final cover, grading, and seeding.

(B) Filled areas lacking final cover, grading, and seeding.

(C) Current areas of operation, including depth of waste fill.

(D) Projected solid waste disposal areas on a per year basis for the next five (5) years.

~~(6) Signatures and certification statements in compliance with section 3 of this rule.~~

(5) A copy of the latest approved final contour plot plan with scale, as required by 329 IAC 10-15-2(a).

(6) A copy of the latest approved subgrade contours or the uppermost contour of the soil liner.

(b) An application for a renewal of a solid waste land disposal facility permit must be submitted at least one hundred twenty (120) days prior to the expiration date of the permit or the permit will be invalid upon expiration.

(c) Fees must be submitted with the application in accordance with IC 13-20-21. (*Solid Waste Management Board; 329 IAC 10-11-5.1; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3791*)

SECTION 45. 329 IAC 10-11-6 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-11-6 Minor modification applications

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3; IC 13-20-1

Affected: IC 13-20-1; IC 13-21-5; IC 36-9-30

Sec. 6. (a) In addition to the application requirements given at section 2.1 of this rule, ~~for a minor modification of a solid waste facility permit, excluding section 2.1(b)(10) of this rule,~~ adequate information must be included in an application for a minor modification of a solid waste land disposal facility permit to demonstrate that the minor modification will be protective of human health ~~and or~~ the environment. The commissioner shall determine the information adequate based on the type of minor modification requested by the facility.

(b) In addition to any requirements in subsection (a), the application must also include the name and address of all owners or last taxpayers of record of property of adjoining land that is within one-half (½) mile of the solid waste boundary.

(c) Fees must be submitted with the application in accordance with IC 13-20-21.

(d) Borrow pits owned by the facility and not permitted by the department on the latest effective date of this section, must be included in the facility permit through application for minor modification on application forms provided by the commissioner. This requirement only includes a borrow pit:

(1) owned by the facility;

(2) not previously permitted by the department on the latest effective date of this section; and

(3) located on-site or on property adjoining the facility.

(*Solid Waste Management Board; 329 IAC 10-11-6; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1812; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2755; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3791*)

SECTION 46. 329 IAC 10-12-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-12-1 Public process for new solid waste land disposal facility permits, and major permit modifications and minor permit modifications

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3; IC 13-20-1

Affected: IC 5-3-1-2; IC 5-3-1-6; IC 5-3-2; IC 13-15-3-3; IC 13-20; IC 36-9-30

Sec. 1. (a) A person submitting an affidavit as required by 329 IAC 10-11-2.5(a)(13) **(20)** and an application for one (1) of the following shall make notice as required in subsection (b):

- (1) A new solid waste land disposal facility permit.
- (2) A major modification for a lateral expansion permit **or a vertical expansion permit.**
- (3) A minor modification permit ~~under 329 IAC 10-2-112(a)(2)~~ **for a lateral expansion that would not:**
 - (A) increase the facility's permitted capacity to dispose of solid waste by the lesser of:**
 - (i) more than ten percent (10%); or**
 - (ii) five hundred thousand (500,000) cubic yards; or**
 - (B) in a lateral expansion, increase the area within the permitted solid waste boundary by more than one (1) acre.**

(b) The notice required by subsection (a) must include the following:

- (1) Not more than ten (10) working days after submitting an application, an applicant shall make a reasonable effort to notify the owners of record of adjoining land to the solid waste land disposal facility or proposed solid waste land disposal facility.
- (2) The notice provided by the applicant in this subsection must:
 - (A) be in writing;
 - (B) include the date on which the application for the permit was submitted to the department; and
 - (C) include a brief description of the subject of the application.

(c) A public meeting must be conducted by the applicant submitting an application for the following:

- (1) A new solid waste land disposal facility permit.
- (2) A major modification to a solid waste land disposal facility permit.

(d) The applicant shall complete the following for the public meeting **as** required in subsection (c):

- (1) Within sixty (60) days after the date the applicant received notification from the commissioner that the application has been deemed complete, conduct a public meeting in the county where the solid waste land disposal facility or major modification designated in the application **is will be** located.
- (2) Publish notice of the public meeting ~~required in subdivision (1)~~ at least ten (10) days prior to the meeting in a newspaper of general circulation in the county where the solid waste land disposal facility or major modification will be located. The notice must:
 - (A) be at least two (2) columns wide by five (5) inches long;
 - (B) not be placed in the part of the newspaper where the legal notices and classified advertisements appear;
 - (C) include the time and date of the public meeting;
 - (D) state the exact place of the public meeting; and
 - (E) have every effort made by the applicant and the department to coordinate the publication date of the notice of the public meeting held by the applicant as required by this subdivision with the publication date of the notice of public hearing held by the department as required in subsection (i)(1).
- (3) Conduct the public meeting as follows:
 - (A) Present a brief description of the location and operation of the proposed solid waste land disposal facility or major modification.
 - (B) Indicate where copies of the application have been filed.
 - (C) If the applicant proposes a design alternative, the applicant must briefly describe the alternative design.
 - (D) State that the department will accept written comments and questions from the public on the permit application and announce the address of the department and name of the person accepting comments on behalf of the department.

- (E) Provide fact sheets on the proposed solid waste land disposal facility or major modification that have been prepared by the department for the public. A department representative shall attend the meeting.
- (F) Offer the opportunity for public comments and questions.

(e) Within five (5) days after the date the applicant received notification from the commissioner that the application has been deemed complete by the department, the applicant shall place a copy of the complete application and any additional information that the department requests at a library in the county where the solid waste land disposal facility or major modification will be located.

(f) The applicant shall pay the costs of complying with subsections (c) through (e).

(g) Failure of the applicant to comply with subsections (c) through (f) may result in the denial of the application by the department.

(h) Public notice must be made by the department as required by IC 5-3-1-2(h) after the date the applicant received notification from the commissioner that the permit application is deemed completed. The public notice must meet the following requirements:

- (1) Indicate where copies of the application are available for public review.
- (2) State that the department will accept comments from the public on the application for at least thirty (30) days.
- (3) Offer the opportunity for a public hearing on the application.
- (4) The department shall publish the notice in accordance with IC 5-3-1-6.
- (5) If the facility boundary of the proposed solid waste land disposal facility ~~is~~ or major modification, if also a lateral expansion, will be within one (1) mile of the county boundary, the department will publish the notice in accordance with IC 5-3-1-6 in the adjacent county.
- (6) In addition to the requirements in IC 5-3-1-6, the department shall publish the notice in two (2) newspapers in the county where the solid waste land disposal facility or major modification is located, if there are two (2) newspapers of general circulation in the county.

(i) The department shall hold a public hearing ~~as~~ **if** required by IC 13-15-3-3. The following apply to a public hearing:

- (1) The department shall publish notice of the hearing as required in IC 5-3-1 and IC 5-3-2 in newspapers of general circulation in the county where the solid waste land disposal facility (if a major modification) or proposed solid waste land disposal facility is located.
- (2) During a hearing, a person may testify within the time provided or submit written comments, or both. The department will consider testimony that is relevant to the requirements of IC 13 and this article.

(Solid Waste Management Board; 329 IAC 10-12-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1812; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2756; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3792)

SECTION 47. 329 IAC 10-13-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-13-1 Issuance procedures; original permits

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-11; IC 13-12; IC 13-13; IC 13-14-8; IC 13-16; IC 13-17; IC 13-19; IC 13-20; IC 13-21; IC 13-22; IC 13-23; IC 13-24; IC 13-25; IC 13-26; IC 13-27; IC 13-27.5; IC 13-29; IC 13-30-2; IC 36-9-30

Sec. 1. (a) The department shall comply with the procedural requirements of IC 13-15-3, IC 13-15-5, and IC 13-15-6 pertaining to public notice, public comment, and public hearing for an application for ~~an~~ **a original** permit for a solid waste land disposal facility regulated under IC 13-19-3.

(b) Subject to the provision of 329 IAC 10-11-1(c), if the department determines that the permit application meets the requirements of this article, and that the solid waste land disposal facility will be constructed and operated in accordance with the requirements of this article and the applicant is otherwise in compliance with the environmental

statutes of Indiana, the permit will be granted. The department may impose such conditions in a permit as may be necessary to:

- (1) comply with the requirements of this article, IC 13-11 through IC 13-30, and IC 36-9-30; or
- (2) protect the public health ~~and~~ **or** the environment.

(c) The notice of the granting of a permit must state that the permit will not become effective until

~~(1) all financial responsibility documents have been executed and delivered to the department in the form and amount specified; and~~

~~(2) the completion and execution of any real estate transfers necessary to vest legal title of the real estate upon which the permitted activity is to occur in the name of the owner listed on the application have been completed, executed, and such documentation necessary to evidence such transfer has been recorded and delivered to the department, or proof of the applicant's agreement regarding the leasing of this property has been submitted to the department.~~

(d) Notwithstanding subsection (c), a variance granted under IC 13-14-8 must not be transferred to another person without independent proof of undue hardship or burden by the person seeking transfer. (*Solid Waste Management Board; 329 IAC 10-13-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1814; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2757; errata filed Jun 10, 1998, 9:23 a.m.: 21 IR 3939; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3793*)

SECTION 48. 329 IAC 10-13-5 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-13-5 Transferability of permits

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-15-7; IC 13-30-6; IC 36-9-30-35

Sec. 5. (a) A permit may be transferred to a third person by the permittee without the need for a new permit or modification or revocation of the existing permit being required if:

(1) the permittee notifies the commissioner of the proposed transfer at least sixty (60) days before the proposed date of transfer on forms provided by the commissioner;

(2) a written contract between the permittee and the third person containing a specific date of transfer of permit responsibility is submitted to the commissioner;

(3) the transferee has not been convicted under IC 13-30-6 or IC 36-9-30-35;

(4) the commissioner has not revoked under IC 13-15-7 a permit to the transferee that was issued under:

(A) this article;

(B) 329 IAC 1.5, which was repealed in 1989; or

(C) 329 IAC 2, which was repealed in 1996;

(5) the third person is, at the time of the application or permit decision, in compliance with the Environmental Protection Acts and ~~regulations~~ **rules** promulgated thereunder and does not have a history of repeated violations of the Acts or ~~regulations~~ **rules** or material permit conditions that evidence an inability or unwillingness to comply with requirements of this article or a facility permit;

(6) the transferee provides proof **to the department** of financial responsibility under 329 IAC 10-39; and

(7) the transferee provides proof **to the department** that ~~it the transferee~~ **it the transferee** is, or will be, the owner of the real property or provides proof of the applicant's agreement regarding the leasing of the property. ~~to the department.~~

(b) The transfer will be effective on the specific date of transfer provided by the permittee unless the commissioner notifies the permittee and the transferee that the transfer will be denied.

(c) Notwithstanding the transfer of a permit, a variance must not be transferred to another person. (*Solid Waste Management Board; 329 IAC 10-13-5; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1815; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2045; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2758*)

SECTION 49. 329 IAC 10-13-6 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-13-6 Permit revocation and modification

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 4-21.5-3; IC 13-15-7-1; IC 36-9-30

Sec. 6. (a) The commissioner may revoke or modify a permit issued under this article if cause exists under IC 13-15-7-1 and may request an updated application if necessary. When a permit is modified, only the conditions ~~subject to modifications~~ **modified** are reopened and subject to review under ~~IC 13-15-7 and IC 4-21.5-3-7~~ **IC 13-15-7-3**. If a permit is revoked, the entire permit is reopened and subject to revision and if the permit is reissued, it may be for a new term.

(b) ~~The commissioner may revoke a permit if the permit applicant is found by the department to have knowingly or intentionally falsified or supplied inaccurate information.~~ If the solid waste land disposal facility is located in an area that is not suitable for the placement of waste as specified by this article, the department shall consider the nonsuitability issue as a sufficient basis for denying the modification or for revoking the permit unless the permittee demonstrates to the department that continued use of the solid waste land disposal facility will not pose a threat to human health or the environment.

~~(d)~~ (c) To request a change in the solid waste land disposal facility plans or operation, the permittee must request that the commissioner modify the permit before any permitted changes are made in the approved plans. The application must provide the rationale for such modification to the commissioner for review. If the commissioner determines that the requested modification is consistent with ~~the standards established in this article~~, the commissioner shall grant the modification. Only the conditions ~~subject to modifications~~ **modified** are reopened. The commissioner shall give notice to the permittee of the determination on the modification in accordance with ~~IC 13-15-7 and IC 4-21.5-3-7~~ **IC 4-21.5-3**.

~~(e)~~ (d) Other than for minor modifications, requests to modify a permit to increase the permitted acreage of the solid waste disposal area of a solid waste land disposal facility shall be processed in accordance with section 1 of this rule. (*Solid Waste Management Board; 329 IAC 10-13-6; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1815; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2758; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3794*)

SECTION 50. 329 IAC 10-14-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-14-1 Quarterly reports

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 24-6; IC 36-9-30

Sec. 1. (a) A quarterly tonnage report of solid waste received at the solid waste land disposal facility must be submitted to the commissioner by the owner, operator, or permittee of that facility.

(b) The report required by subsection (a) must be submitted on or before the fifteenth day of the month immediately following the end of the calendar quarter being reported. If the submittal date falls on a Saturday, a Sunday, or a national or state legal holiday, the submittal date will be the next day that is not a Saturday, a Sunday, or a national or state legal holiday.

(c) The report required by subsection (a) must be submitted by the owner, operator, or permittee of the solid waste land disposal facility that is open to accept solid waste for disposal unless the owner, operator, or permittee of the solid waste land disposal facility has ceased accepting solid waste for a period of at least one (1) calendar quarter, and has sent written notification to the commissioner indicating the initiation of final closure under 329 IAC 10-22-4, 329 IAC 10-30-6, or 329 IAC 10-37-6 as appropriate.

(d) The solid waste hauler shall provide the owner, operator, or permittee of the solid waste land disposal facility with the origin of the solid waste delivered to the solid waste land disposal facility. The hauler shall estimate, by

percent, the type and amount of solid waste originating in each county and state, or country if other than the United States, if the load contains solid waste from more than one (1) county, state, or country.

(e) The owner, operator, or permittee of the solid waste land disposal facility shall submit the quarterly tonnage report required by subsection (a) as follows:

(1) ~~On~~ **In** the most current paper ~~report form or electronic submittal format~~ prescribed by the ~~department~~ **commissioner**. The owner, operator, or permittee may obtain a quarterly tonnage report form from the department. The form:

(A) may be photocopied **or electronically copied** by the owner, operator, or permittee of the solid waste land disposal facility; and

(B) in its most current format, may be computer generated by the owner, operator, or permittee of the solid waste land disposal facility.

(2) The original of each paper report must be signed by the solid waste land disposal facility owner, operator, or permittee as certification of report accuracy.

(3) Each report must be accurate, legible, and complete.

~~(4) One (1) additional paper copy of each original paper report must be submitted with the original paper report required in subdivision (6).~~

~~(5) In addition to the paper report required in subdivision (1), an electronic report in a format approved by the commissioner may also be submitted.~~

~~(6) (4) The paper report and any approved format required by this subsection must meet the requirements of 329 IAC 10-1-4, as applicable, and must include at least the following information:~~

(A) The weight in total tons of solid waste received at the solid waste land disposal facility for that calendar quarter compiled by waste type and origin.

(B) The county and state in which the solid waste originated. If the solid waste originated outside of the United States, the country must be designated. The origin must be provided to the solid waste land disposal facility by the solid waste hauler as described in subsection (d).

(C) The type, total weight in tons, and final destination of solid waste diverted from disposal for reuse or recycling after being received at the solid waste land disposal facility.

~~(D) The estimated remaining disposal capacity, in cubic yards, that is calculated by subtracting the existing fill volume as determined by the contour map required by 329 IAC 10-20-8(a)(6) from the design capacity.~~

~~(E) The estimated remaining solid waste land disposal facility life, in years, for the remaining disposal capacity.~~

~~(F) (D)~~ (D) Waste types, including the following:

(i) Municipal solid waste.

(ii) Construction/demolition waste.

(iii) **Special Foundry** waste.

(iv) **Coal ash**.

(v) **Flue gas desulfurization wastes**.

(vi) Other solid waste.

(f) If the owner, operator, or permittee of the solid waste land disposal facility ascertains that there is an error in any report previously submitted as required by subsection (a), a revised report reflecting the correct information must be submitted in the same format as the original submission. The revised report must:

(1) have "Amended" written or typed at the top of each page of the resubmitted report; and

(2) be submitted before or with the submission of the next quarterly tonnage report after ascertaining an error.

(g) Copies of reports required by this section must be:

(1) maintained on-site by the solid waste land disposal facility owner, operator, or permittee for three (3) years after the submittal date of the report; and

(2) made available during normal operating hours for on-site inspection and photocopying **or electronic copying** by a representative of the department.

(h) The solid waste land disposal facility owner, operator, or permittee shall maintain the documentation on-site to substantiate reports required by this section. Such documentation must be:

- (1) maintained by the solid waste land disposal facility owner, operator, or permittee for three (3) years after the report's submittal date; and
- (2) made available during normal operating hours for on-site inspection and photocopying **or electronic copying** by a representative of the department.

(i) Failure to submit reports and copies as required by this section or maintain copies of reports and records as required by this section constitutes an operational violation under 329 IAC 10-1-2. (*Solid Waste Management Board; 329 IAC 10-14-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1815; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2759; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3795*)

SECTION 51. 329 IAC 10-15-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-15-1 General requirements

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 1. (a) A permit application for a new MSWLF or a lateral expansion must be accompanied by the following plans and documentation:

- (1) Plot plans as specified under section 2 of this rule.
- (2) Cross-sectional drawings and details as specified under section 3 of this rule.
- (3) A hydrogeologic site investigation report as specified under sections 4 and 5 of this rule.
- (4) An operational plan of the proposed MSWLF as specified under section 6 of this rule.
- (5) A CQA/CQC plan as specified under section 7 of this rule.
- (6) Calculations and analyses pertaining to MSWLF design as specified under section 8 of this rule.
- (7) An explosive gas management plan as specified under 329 IAC 10-20-17.
- (8) A closure plan as specified under 329 IAC 10-22-2.
- (9) A post-closure plan, as specified under 329 IAC 10-23-3.
- (10) A quality assurance project plan as specified under 329 IAC 10-21-2(b)(13).
- (11) A sampling and analysis plan as specified under 329 IAC 10-21-2.
- (12) A general description for developing a statistical evaluation plan as required by 329 IAC 10-21-6(c). The description must include a time frame for submitting the statistical evaluation plan.
- (13) If applicable, a baled waste management plan as specified under section 9 of this rule.
- (14) A leak detection plan as specified under section 10 of this rule.
- (15) A leachate collection contingency plan as specified under section 11 of this rule.
- (16) A storm water pollution prevention plan as specified under section 12 of this rule.**
- ~~(16)~~ (17) Other plans as may be required by the commissioner.

(b) Plans and documentation that accompany a permit application for a new MSWLF or a lateral expansion must be certified as follows:

- (1) The hydrogeologic site investigation report required in subsection (a)(3) must be certified by a **certified licensed** professional geologist **under IC 25-17.6-1-6.5.** or a qualified ground water scientist, either of whom shall have educational or professional experience in hydrogeology or ground water hydrology.
- (2) With the exception of the hydrogeologic site investigation report and the sampling and analysis plan, all plans and documentation required in subsection (a) must be certified by a registered professional engineer.

(c) A full set of plans and documentation required by this section must accompany each of the five (5) copies of the permit application required in 329 IAC 10-11-2.1(c). **In addition to the paper copies, a copy of the plans and documentation required by this section may also be submitted on a computer diskette, the type and format of which will be prescribed by the department.**

(d) All plans and documentation must be properly titled. (*Solid Waste Management Board; 329 IAC 10-15-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1817; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2760; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3797*)

SECTION 52. 329 IAC 10-15-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-15-2 Plot plan requirements

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 2. (a) Plot plans required by subsections (b) through (d) must:

- (1) use a scale of at least one (1) inch per one hundred (100) feet for a MSWLF of less than eighty (80) acres;
- (2) use a scale of at least one (1) inch per two hundred (200) feet, for a MSWLF of eighty (80) acres to and including one hundred fifty (150) acres;
- (3) use a scale of at least one (1) inch per three hundred (300) feet for an MSWLF greater than one hundred fifty (150) acres;
- (4) include a bar scale on each drawing;
- (5) include elevations that correlate with United States Geological Survey (USGS) mean sea level data;
- (6) include a north arrow; and
- (7) include a map legend.

(b) A permit application for a new MSWLF or a lateral expansion must be accompanied by an existing features plot plan that includes the facility boundary, and the solid waste boundary and indicates the presence or absence of each of the following features within three hundred (300) feet **outside** of the facility boundary:

- (1) Location and elevations of all existing boreholes.
- (2) Rock outcroppings.
- (3) Surface water run-off directions.
- (4) Fences.
- (5) Utility easements and rights-of-way.
- (6) Existing structures.
- (7) Benchmark descriptions.
- (8) Surface contours with intervals of no more than:
 - (A) two (2) feet if the MSWLF is less than eighty (80) acres; or
 - (B) five (5) feet if the MSWLF is equal to or greater than eighty (80) acres.
- (9) Real property boundary.

(c) The proposed final contour plot plan required by subsection (d)(1) must indicate surface contours of the MSWLF and three hundred (300) feet beyond the facility boundary. The contour intervals must be no more than:

- (1) two (2) feet if the MSWLF is less than eighty (80) acres; or
- (2) five (5) feet if the MSWLF is equal to or greater than eighty (80) acres.

(d) A permit application for a new MSWLF or a lateral expansion must be accompanied by plot plans showing the following:

- (1) Proposed final contours, indicating the following features that would remain after closure:
 - (A) Any buildings.
 - (B) Proposed drainage.
 - (C) Proposed sedimentation and erosion control structures.
 - (D) Proposed vegetation, fencing, and visual screening.
 - (E) Proposed roadways providing access to and around the site that are necessary for post-closure care and monitoring.
 - (F) Proposed berms, flood protection dikes, and surface water diversion structures.
 - (G) Proposed explosive gas monitoring and management system.

- (H) Proposed solid waste boundary.
- (I) Proposed monitoring wells.
- (2) Proposed leachate collection system, indicating the following:
 - (A) Proposed ~~soil liner top contour~~: **uppermost contour of the soil liner.**
 - (B) Piping layout.
 - (C) Cleanout and riser locations.
 - (D) Sump contours or elevations if applicable.
 - (E) Lift station locations if applicable.
 - (F) Leachate storage areas if applicable.
- ~~applicable:~~
- (3) Initial facility development plan and details, indicating the following:
 - (A) Proposed benchmarks.
 - (B) Proposed buildings and on-site transfer.
 - (C) Proposed drainage, including permanent sedimentation and erosion control structures, **including only typical details for temporary erosion structures.**
 - (D) Proposed explosive gas monitoring and management system.
 - (E) Proposed fencing and visual screening.
 - (F) Proposed on-site roads.
 - (G) Proposed ~~soil liner top contours~~: **uppermost contour of the soil liner.**
 - (H) ~~On-site~~ Borrow area for soil liner material and daily cover if applicable.
 - (I) Delineation of other construction activities within the property boundary of the landfill.**
- (4) Operational plot plan indicating the sequence of cell development, and indicating the following:
 - (A) Additional proposed benchmarks, if applicable.
 - (B) Additional proposed buildings, if applicable.
 - (C) Additional drainage features and permanent erosion and sediment control features, **including only typical details for temporary erosion structures.**
 - (D) Additional fencing and visual screening.
 - (E) Proposed on-site roads.
 - (F) Direction of fill progression.
- (5) Any other plot plan that ~~may be determined to be required by~~ the commissioner **may require based on particular site or facility conditions.**

(Solid Waste Management Board; 329 IAC 10-15-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1818; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3797)

SECTION 53. 329 IAC 10-15-5 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-15-5 Description of proposed ground water monitoring well system

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 5. (a) The hydrogeologic site investigation report that accompanies permit applications for new MSWLFs and lateral expansions must contain a description of the proposed **ground water** monitoring well system that, at a minimum, includes the following information:

- (1) Monitoring point locations, design, and installation procedures. Installation procedures must comply with 329 IAC 10-21-4.
- (2) A thorough evaluation of the suitability of any existing monitoring points proposed for inclusion in the **ground water** monitoring well system.
- (3) An explanation of how the proposed **ground water** monitoring well system addresses the hydrogeologic conditions identified within the uppermost aquifer system and any significant zones of saturation that exist above the uppermost aquifer system.
- (4) A description of how and where ground water monitoring wells will be installed at appropriate locations and depths, to yield ground water samples from the uppermost aquifer and any significant zones of saturation that

exist above the uppermost aquifer system. Ground water samples must represent both the quality of background ground water quality that has not been affected by the proposed MSWLF unit and ground water quality passing the monitoring boundary of the proposed MSWLF unit.

(5) A description of how ~~upgradient~~ **background ground water monitoring** wells will monitor the same hydrologic units as the downgradient **ground water** monitoring wells.

(6) If a single monitoring well cannot adequately intercept and monitor the vertical extent of a potential pathway of contaminant migration at a sampling location, a description of how a **ground water monitoring** well cluster will be installed.

(7) For the uppermost aquifer system, a description of how ground water monitoring well spacing will not exceed five hundred (500) feet along the monitoring boundary of the proposed MSWLF unit. In geologically complex environments as determined by the commissioner, closer **monitoring** well spacing may be required. Alternate spacing of ground water monitoring wells must be approved by the commissioner. **Monitoring** well spacing must provide at least two (2) ~~upgradient~~ **background ground water monitoring wells** and four (4) downgradient monitoring wells or well clusters within the uppermost aquifer system and any significant zones of saturation that exist above the uppermost aquifer system. An alternate number of ~~upgradient~~ **background** wells must be approved by the commissioner.

(8) Alternative ground water monitoring devices or sampling devices may be approved by the commissioner if it is demonstrated that the alternative will provide results that represent ground water quality from beneath the MSWLF in an equivalent manner as provided by ground water monitoring wells. Regardless of location of the alternative monitoring device, the monitoring boundary, for the purposes of 329 IAC 10-21-13, must remain within fifty (50) feet of the solid waste boundary. Any such demonstration must include the following:

(A) A complete description of the device and how it complies or differs from 329 IAC 10-21-1 through 13;

(B) A scientifically valid justification for any deviations from 329 IAC 10-21;

(C) Any references that indicate the proficiency of the device under similar conditions;

(D) Provision for the ground water monitoring device or devices construction plan to be approved prior to their construction;

(E) A complete description of the proposed location of the device or devices, or the methods of determining the most adequate location, including proof of the facility's control, accessibility, and security of each location.

(b) The commissioner may consider an individual compliance **ground water** monitoring well system for intrawell statistical comparison methods if the permittee can demonstrate either of the following:

(1) The uppermost aquifer system, and any significant zones of saturation that exist above the uppermost aquifer system are discontinuous.

(2) Significant spatial variability exists within the aquifer.

(Solid Waste Management Board; 329 IAC 10-15-5; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1823; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2765; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3804)

SECTION 54. 329 IAC 10-15-8 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-15-8 Calculations and analyses pertaining to landfill design

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 8. (a) The applicant shall provide calculations and analyses pertaining to the design of the proposed MSWLF unit, if applicable, and if necessary as determined by the commissioner, to indicate that the proposed design complies with the design requirements of 329 IAC 10-17. Any required calculations must be accompanied by a discussion of methods, assumptions, and the references used. Calculations that may be required include the following:

- (1) A transmissivity, **in plane hydraulic conductivity**, calculation or an assessment based on the maximum compressive load placed above the geosynthetic, using a minimum safety factor of ten (10), when a geosynthetic material is used for the drainage layer. In addition, the long term creep impact on the transmissivity of the geosynthetic must be evaluated using a minimum safety factor of five (5).
- (2) A permissivity, **cross-plane hydraulic conductivity**, calculation using a minimum factor of safety of fifty (50), when a geosynthetic material is used for the drainage layer.
- (3) A filter-retention calculation **or assessment**, when a geosynthetic material is used for the drainage layer.
- (4) A tensile stresses calculation to evaluate stresses generated during the construction and operation of the interior of the side slope of the proposed MSWLF unit. A minimum safety factor of five (5) on yield is required.
- ~~(5) A strain-settlement calculation to evaluate the ability of the geosynthetic layer to resist down-drag forces resulting from the subsidence of the contained waste. A minimum ultimate safety factor of one and one-half (1.5) on ultimate stress is required.~~
- ~~(6)~~ (5) A filter-clogging calculation to evaluate the influence of retained soil particles on the permissivity of a geotextile or geonet. Also, a gradient ratio test or a hydraulic conductivity ratio test, as appropriate, must be performed in accordance with test standards specified in 329 IAC 10-17-17.
- ~~(7)~~ (6) A localized subsidence calculation, if applicable, to evaluate the strains induced in the geomembrane used for the liner system and for final cover.
- ~~(8)~~ (7) A stability of final cover calculation to evaluate the likelihood and extent to which final cover components may slide with respect to each other. A minimum safety factor ~~of one and three-tenths (1.3)~~ **as outlined in Table 1 of this section** is required.
- ~~(9)~~ (8) A **geomembrane geosynthetic anchor or pull-out anchorage calculation or assessment** to evaluate the anchoring capacity and stresses in a geomembrane. A minimum safety factor of one and two-tenths (1.2) is required. **An anchor must provide sufficient restraint to hold a geosynthetic liner in place, but should not be so rigid or strong that the geosynthetic liner will tear before the anchor yields.**
- ~~(10)~~ (9) A settlement potential calculation to estimate the total and differential settlement of the foundation soil due to stresses imposed by the liner system, in-place waste, daily cover, intermediate cover, equipment usage, and final cover.
- ~~(11)~~ (10) A bearing capacity and stability calculation to estimate the load bearing capacity and slope stability of the foundation soil during construction. A minimum safety factor of two (2.0) is required for a static condition.
- ~~(12) A bottom heave and blow-out calculation to estimate the potential for a bottom heave or blow-out due to unequal hydrostatic or gas pressure.~~
- (11) **The uplift pressure or hydrostatic pore water pressure must be evaluated based on site-specific conditions.**
- ~~(13)~~ (12) A waste settlement analysis to assess the potential for the final cover system to stretch due to total and differential settlement of the solid waste. If there is a lack of documented settlement of the solid waste, a value of approximately seven percent (7%) to fifteen percent (15%) of the solid waste height may be used for this calculation.
- ~~(14)~~ (13) A wind uplift force calculation **or an assessment** to provide an indication that wind uplift will not damage the geomembrane during installation.
- ~~(15)~~ (14) A wheel loading calculation to indicate that the amount of wheel loading of construction equipment will not damage the liner system.
- ~~(16)~~ (15) A puncture of geomembrane calculation to indicate that the amount of down drag force induced by the leachate collection sumps and manhole with vertical standpipe settlement will not cause failure of the underlying liner system. A minimum safety factor of two (2.0) on tensile strength at yield is required.
- ~~(17)~~ (16) An erosion calculation to indicate that the erosion rate will not exceed five (5) tons per acre per year, as is required under 329 IAC 10-22-7(c)(3).
- ~~(18)~~ (17) Pipe calculations to assess the leachate collection piping for deflection, buckling, and crushing.
- ~~(19)~~ (18) If applicable, or if required under 329 IAC 10-16-5(b), an analysis of the effect of seismic activity on the structural components of the landfill.
- ~~(20)~~ (19) A peak flow calculation to identify surface water flow expected from a twenty-five (25) year storm.
- ~~(21)~~ (20) A calculation to identify the total run-off volume expected to result from a twenty-four (24) hour, twenty-five (25) year storm event.

- (22) (21) A chemical resistance evaluation to demonstrate that the leachate collection and removal system components are chemically resistant to the waste and the leachate expected to be generated.
- (23) (22) A clogging evaluation to demonstrate that the system as designed will be resistant to clogging throughout the active life and post-closure period of the MSWLF.
- (24) (23) A slope stability analysis that follows the requirements outlined in Table 1 of this subdivision. Any geosynthetic materials installed on landfill slopes must be designed to withstand the calculated tensile forces acting upon the geosynthetic materials. The design must consider the minimum friction angle of the geosynthetic with regard to any soil-geosynthetic or geosynthetic-geosynthetic interface.

TABLE 1
Minimum Values of Safety Factors for
Slope Stability Analyses **for Liner and Final Cover
Systems**

| | Uncertainty of Strength Measurements | |
|---|--------------------------------------|-------------------------------------|
| | Small ¹ | Large ² |
| Consequences of Slope Failure | | |
| No imminent danger to human life or major environmental impact if slope fails | 1.25 (1.2)* | 1.5 (1.3)* |
| Imminent danger to human life or major environmental impact if slope fails | 1.5 (1.3)* | 2.0 or greater (1.7 or greater)* |

¹The uncertainty of the strength measurements is smallest when the soil conditions are uniform and high quality strength test data provide a consistent, complete, and logical picture of the strength characteristics.

²The uncertainty of the strength measurements is greatest when the soil conditions are complex and when the available strength data do not provide a consistent, complete, and logical picture of strength characteristics.

*Numbers without parentheses apply **for** to static conditions and those within parentheses apply to seismic conditions.

(25) (24) Any additional calculation determined by the commissioner to be necessary to ascertain whether the proposed design complies with the requirements of this article.

(b) Test standards for MSWLF liner systems are listed in 329 IAC 10-17-17. (*Solid Waste Management Board; 329 IAC 10-15-8; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1825; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2767; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3806*)

SECTION 55. 329 IAC 10-15-12 IS ADDED TO READ AS FOLLOWS:

329 IAC 10-15-12 Storm water pollution prevention plan

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 12. (a) This section applies to the requirements of implementing a storm water pollution prevention plan at an MSWLF.

(b) The plan must:

(1) identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the facility;

- (2) describe implementation of practices and measures that will be used to reduce pollutants in storm water discharges to the facility; and
- (3) assure compliance with this article.

(c) The pollution prevention plan must, at a minimum, contain the following information:

- (1) Identification, by title, of staff on the facility's storm water pollution prevention team and their responsibilities.
- (2) A site description and map of the facility describing or showing a description of the planned construction and landfill operational activities.

(d) The pollution prevention plan must include a written spill response program to include the following information:

- (1) Location, description, and quantity of all response materials and equipment.
- (2) Response procedures for facility personnel to respond to a release.
- (3) Contact information for reporting spills, both for facility staff and external emergency response entities.
- (4) All corrective actions that will be taken for spills found during inspections, testing, and maintenance, must be documented and included in the SWP3.

(e) A narrative description of potential pollutant source areas, including descriptions for any existing or historical areas, and any other areas thought to be a potential source of storm water exposure to pollutants. The narrative descriptions for each area must include the following:

- (1) Type and typical quantity of materials present in the area.
- (2) Methods of storage, including presence of any secondary containment measures.
- (3) Any remedial actions undertaken in the area, including the following:
 - (A) The date and type of each action, for example, removal of an underground storage tank.
 - (B) The quantity and type of contaminated materials, such as soils or water, removed or treated.
 - (C) The results of any analytical sampling data to confirm an adequate removal of contaminated media.
 - (D) The name and address of any disposal facility utilized.
- (4) Any release or spill history dating back a period of three (3) years from the date of the pollution prevention plan, in the area, for materials spilled outside of secondary containment structures in excess of the materials' reportable quantity or twenty-five (25) gallons, whichever is less, including the following:
 - (A) The date and type of material released or spilled.
 - (B) The estimated volume released or spilled.
 - (C) A description of the remedial actions undertaken, including disposal or treatment.
 - (D) The results of any analytical sampling data to confirm an adequate removal of contaminated media.

For permit renewals, the history shall date back for a period of five (5) years from the date of the storm water pollution prevention plan.

(5) The descriptions for each area must include a risk identification analysis of chemicals or materials stored or used within the area. The analysis must include the following:

- (A) Toxicity data of chemicals or materials used within the area, referencing appropriate Material Safety Data Sheet information locations.
 - (B) The frequency and typical quantity of listed chemicals or materials to be stored on site.
 - (C) Potential ways in which storm water discharges may be exposed to listed chemicals and materials.
 - (D) The likelihood of the listed chemicals and materials to come into contact with storm water.
- (6) A narrative description of existing and planned management practices and measures to improve the quality of storm water run-off leaving the facility property or entering a water of the state. Descriptions must be created for existing or historical areas and any other areas thought to be a potential source of storm water exposure to pollutants. The description must include the following:
- (A) Any existing or planned structural and nonstructural control practices and measures.
 - (B) Any treatment the storm water receives prior to leaving the facility property.

(C) The ultimate disposal of any solid or fluid wastes collected in structural control measures other than by discharge.

(7) A mapped or narrative description of any such management practice or measure must be added to the SWP3.

(f) The facility shall submit with the SWP3 the following:

(1) The results of monitoring required in 329 IAC 10-20-11(h) of this rule.

(2) The monitoring data must include:

(A) completed field data sheets;

(B) chain-of-custody forms; and

(C) laboratory results.

(3) As two (2) or more sample monitoring events are completed, the laboratory results must be placed in a comparative table, so that each sampled parameter can be compared to indicate water quality improvements in the run-off from the facility.

(g) For the entire facility, storm water exposure to pollutants must be minimized. To ensure this reduction, a written preventative maintenance program must be written and implemented that includes the following:

(1) Implementation of good housekeeping practices to ensure the facility will be operated in a clean and orderly manner and that pollutants will not have the potential to be exposed to storm water via vehicular tracking or other means.

(2) Maintenance of storm water management measures, for example, catch basins or the cleaning of oil or water separators. All maintenance must be documented and contained in the SWP3.

(3) Inspection and testing of facility equipment and systems to ensure appropriate maintenance of such equipment and systems and to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters must be documented and contained in the pollution prevention plan.

(Solid Waste Management Board; 329 IAC 10-15-12)

SECTION 56. 329 IAC 10-16-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-16-1 Airport siting restrictions

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-18; IC 13-20; IC 36-9-30

Sec. 1. (a) This section applies to:

(1) permit applications under this article for new MSWLFs and lateral expansions; or

(2) MSWLFs permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996.

(b) Applicants for new MSWLFs and lateral expansions that are applying for a permit under this article must not locate a proposed MSWLF unit within ten thousand (10,000) feet of any airport runway end used by turbojet aircraft or within five thousand (5,000) feet of any airport runway end used by only piston-type aircraft unless the permit application includes a demonstration that the proposed MSWLF unit is designed and operated so as not to pose a bird hazard to aircraft.

(c) Permittees of MSWLFs permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, located within ten thousand (10,000) feet of any airport runway end used by turbojet aircraft or within five thousand (5,000) feet of any airport runway end used by only piston-type aircraft must complete the following:

(1) A demonstration that any MSWLF unit within the MSWLF is designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft.

(2) Provide a copy of the demonstration to the commissioner.

(3) Provide a copy of the demonstration to the affected airport.

(d) Applicants for new MSWLFs and lateral expansions that are applying for a permit under this article or permittees of MSWLFs permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, must complete the following if any proposed or existing MSWLF unit within the MSWLF is located within a five (5) mile radius of any airport runway end used by turbojet or piston-type aircraft:

- (1) Notification to the affected airport and the Federal Aviation Administration (FAA) of the intent to site a solid waste land disposal facility.
- (2) If a demonstration is required by this section, provide a copy of the demonstration to the affected airport.

(e) For all demonstrations, the commissioner may ask for additional information prior to approval or denial of the demonstration.

(f) A new MSWLF must not be permitted to be constructed within six (6) miles of a public airport as specified under 40 CFR 258.10(e), unless the MSWLF permittee has been granted an exemption under 40 CFR 258.10(e)(1). (*Solid Waste Management Board; 329 IAC 10-16-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1826; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2046; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2769; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3807*)

SECTION 57. 329 IAC 10-16-8 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-16-8 Karst terrain siting restrictions

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 8. (a) This section applies to:

- (1) permit applications under this article for new MSWLFs and lateral expansions; or
- (2) MSWLFs permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996.

(b) Applicants for new MSWLFs and lateral expansions that are applying for a permit under this article, and for new MSWLFs and lateral expansions permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, must not locate any MSWLF unit ~~within the new MSWLFs or lateral expansions~~ in or over karst terrains.

(c) MSWLF units permitted and constructed under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, must not be located in or over karst terrains without provisions to collect and contain all of the leachate generated by the MSWLF units and without a demonstration that the integrity of the MSWLF units will not be damaged by subsidence.

(d) For all demonstrations, the commissioner may ask for additional information prior to approval or denial of the demonstration. (*Solid Waste Management Board; 329 IAC 10-16-8; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1829; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2046; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2772; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3810*)

SECTION 58. 329 IAC 10-17-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-17-2 Overview of liner designs and criteria for selection of design

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 2. (a) The following liner design is required for any section of a new MSWLF unit within an MSWLF or lateral expansion to be permitted under this article that will not be located over an aquifer of significance, as defined under 329 IAC 10-2-13, or will be located over an aquifer of significance, but there is a continuous layer of at least ten

(10) feet of nonaquifer material, as defined under 329 IAC 10-2-120, separating the base of the proposed soil liner and the uppermost portion of the aquifer:

(1) At the base and side slopes, starting from the subgrade and extending upward, the liner must include the following components:

- (A) A minimum of three (3) feet of compacted soil, having a hydraulic conductivity of 1×10^{-7} centimeters per second or less.
- (B) A geomembrane.
- (C) A drainage layer.
- (D) A protective cover.

(2) At all sump areas, ~~and~~; at a minimum, ~~at the liner areas within twenty-five (25) feet lateral to the center of each sump~~, **must extend ten (10) feet from the outermost edge of the designated sump boundary, on all sides**, starting from the subgrade and extending upward, the liner must include the following components:

- (A) A minimum of two (2) feet of compacted soil, having a hydraulic conductivity of 1×10^{-6} centimeters per second or less.
- (B) A leak detection zone. The leak detection zone must meet the applicable requirements in this section and sections 8, 9, and 13 through 16 of this rule for drainage layers.
- (C) A minimum of three (3) feet of compacted soil having a hydraulic conductivity of 1×10^{-7} centimeters per second or less.
- (D) A geomembrane.
- (E) A geosynthetic clay liner.
- (F) A geomembrane.
- (G) A drainage layer.
- (H) A protective cover.

(b) The following liner design is required for any section of a new MSWLF unit or lateral expansion within an MSWLF to be permitted under this article that will be located over an aquifer of significance, as defined under 329 IAC 10-2-13, and there is not a continuous layer of at least ten (10) feet of nonaquifer material, as defined under 329 IAC 10-2-120, separating the base of the proposed soil liner and the uppermost portion of the aquifer:

(1) At the base and side slopes, starting from the subgrade and extending upward, the liner must include the following components:

- (A) A minimum of two (2) feet of compacted soil, having a hydraulic conductivity of 1×10^{-6} centimeters per second or less. This component must extend up the side slope of the proposed MSWLF unit to a height at least two (2) feet above the highest temporal fluctuation of the ground water table, as determined from the hydrogeologic site investigation required under 329 IAC 10-15-4.
- (B) A drainage layer. This component must extend up the side slope of the proposed MSWLF unit to a height at least two (2) feet above the highest temporal fluctuation of the ground water table, **but not closer than five (5) feet from the ground surface**, as determined from the hydrogeologic site investigation required under 329 IAC 10-15-4.
- (C) A minimum of three (3) feet of compacted soil having a hydraulic conductivity of 1×10^{-7} centimeters per second or less.
- (D) A geomembrane.
- (E) A drainage layer.
- (F) A protective cover.

(2) At all sump areas, ~~and~~; at a minimum, ~~at the liner areas within twenty-five (25) feet lateral to the center of each sump~~, **must extend ten (10) feet from the outermost edge of the designated sump boundary, on all sides**, starting from the subgrade and extending upward, the liner must incorporate the design components described in subsection (a)(2).

(c) For the purposes of this rule, sump areas are considered to be those areas of the proposed MSWLF unit that are designed to collect and remove leachate where leachate is expected to accumulate to a depth of at least one (1) foot.

(d) The minimum distance for extension of liner design components related to sump areas may be increased at the discretion of the commissioner, depending on site-specific factors, with consideration of the highest temporal fluctuations of the ground water table at the site.

(e) The commissioner may make available to the applicant standardized municipal solid waste landfill designs that are not less stringent than the requirements of this rule. (*Solid Waste Management Board; 329 IAC 10-17-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1831; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2774; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3813*)

SECTION 59. 329 IAC 10-17-7 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-17-7 Geomembrane component of the liner; construction and quality assurance/quality control requirements

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 7. (a) Before geomembrane field construction, the project engineer shall review documentation of quality control testing as follows:

(1) In a review of the testing of raw materials used to manufacture the geomembrane, the project engineer shall do the following:

- (A) Ensure that the quality control testing meets the specifications of the approved construction plan.
- (B) Review copies of the origin and identification of the raw materials.
- (C) Review copies of quality control certificates issued by the producers of the raw materials. The certificates must be accompanied by results of the following tests unless a particular test requirement is waived by the commissioner:
 - (i) Density test.
 - (ii) Melt flow index test.
 - (iii) Any other test deemed necessary by the commissioner to verify raw material quality.

(2) In a review of the testing documentation of the geomembrane rolls that are fabricated into geomembrane, the project engineer shall do the following:

- (A) Check the manufacturer's certified quality control documentation to verify that the geomembrane was continuously inspected during the manufacturing process for the following:
 - (i) Lack of uniformity.
 - (ii) Damage.
 - (iii) Imperfections.
 - (iv) Holes.
 - (v) Cracks.
 - (vi) Thin spots.
 - (vii) Foreign materials.
- (B) Ensure that any imperfections discovered during inspection were repaired and then reinspected, either at the manufacturing facility or on-site at the MSWLF.
- (C) Review the results of **manufacturer's quality control tests conducted on the finished product by the geomembrane manufacturer: for conformance with project specifications.** These tests must include, at a minimum, the following:
 - (i) **Single point stress rupture test: Stress crack resistance test.**
 - (ii) Tensile strength test.
 - (iii) Tear and puncture resistance test.
 - (iv) **Any other test deemed necessary by the commissioner to verify finished product quality: Oxidative induction time (OIT) at:**
 - (AA) standard OIT; or**
 - (BB) high pressure OIT.**
 - (v) **Ultraviolet resistance at high pressure OIT.**
 - (vi) **Any other test deemed necessary by the commissioner to verify quality.**

- (3) The project engineer shall ensure that manufacturer quality control testing of the raw materials and of the finished geomembrane product was conducted:
- (A) as required in the approved construction plans; or
 - (B) as otherwise required by the commissioner.
- (b) During geomembrane field construction, the project engineer shall ensure the following:
- (1) The geomembrane is installed on supporting soil that is reasonably free of the following:
- (A) Stones.
 - (B) Organic material, except that organic material naturally occurring in the soil.
 - (C) Irregularities.
 - (D) Protrusions.
 - (E) Loose soil or soft spots.
 - (F) Standing water.
 - (G) Any abrupt change in grade that could damage the geomembrane.
- (2) All aspects of geomembrane installation are carried out in accordance with the following:
- (A) The approved construction plan.
 - (B) The manufacturer's recommendations.
 - (C) The design standards described under section 6 of this rule.
 - (D) Any additional requirements necessary to obtain adequate geomembrane liner construction and installation, as specified in the construction plans or as determined by the commissioner **to assure the quality of the geomembrane liner.**
- (3) The anchor trench is excavated to the length and width prescribed in the approved construction plans.
- (4) Field seaming is conducted as follows:
- (A) To meet the requirements for design of the geomembrane component of the liner, as described under section 6 of this rule.
 - (B) In a manner that leaves seams free of the following:
 - (i) Dust.
 - (ii) Dirt.
 - (iii) Moisture.
 - (iv) Debris.
 - (v) Foreign material of any kind.
 - (C) Using an appropriate method consistent with:
 - (i) the approved construction plan; or
 - (ii) a method otherwise approved by the commissioner.
 - (D) At a time when the following conditions exist, unless otherwise approved by the commissioner or project engineer, or otherwise recommended by the manufacturer:
 - (i) Air temperature is at least thirty-two (32) degrees Fahrenheit but does not exceed one hundred twenty (120) degrees Fahrenheit.
 - (ii) Sheet temperature is at least thirty-two (32) degrees Fahrenheit but does not exceed one hundred fifty-eight (158) degrees Fahrenheit.
 - (iii) Wind gusts are not in excess of twenty (20) miles per hour.
- (5) Quality assurance and quality control testing conducted in the field conforms with requirements of the approved construction plan and includes the following:
- (A) A sample is taken from each lot number of geomembrane material that arrives on site and is tested in the following manner for the purpose of fingerprinting the material:
 - (i) Thickness of the sample must be measured at a rate of five (5) measurements per roll of geomembrane, at locations evenly distributed throughout the roll.
 - (ii) The following tests must be conducted at a rate of either once per lot or once per fifty thousand (50,000) square feet of geomembrane:
 - (AA) Tensile characteristics test for strength and elongation at yield and at break.
 - (BB) Carbon black content test.
 - (CC) Carbon black dispersion test, if applicable.

- (DD) Any additional tests that are necessary as determined by the commissioner **to demonstrate the integrity of the geomembrane.**
- (B) Visual inspections of the geomembrane material, followed by appropriate repairs and reinspections, are made for:
- (i) lack of uniformity;
 - (ii) damage;
 - (iii) imperfections;
 - (iv) tears;
 - (v) punctures;
 - (vi) blisters; and
 - (vii) excessive folding.
- (C) Test seams for shear strength and peel strength are made as follows:
- (i) At the start of each work period for each seaming crew.
 - (ii) After every four (4) hours of continuous seaming.
 - (iii) Every time seaming equipment is changed.
 - (iv) When significant changes in geomembrane temperature, as determined by the project engineer or by manufacturer recommendation, are observed.
 - (v) As required in the approved construction plan.
 - (vi) As may be required by the commissioner.
- (D) Nondestructive seam testing proceeds as follows:
- (i) Testing is performed on all seams over their full length using a test method:
 - (AA) in accordance with the approved construction plans;
 - (BB) in accordance with section 17 of this rule; or
 - (CC) otherwise acceptable to the commissioner.
 - (ii) Testing is monitored by the project engineer, and seaming and patching operations are inspected for uniformity and completeness.
 - (iii) Results of testing are recorded by the project engineer in records that include the following information:
 - (AA) The location of the seam test.
 - (BB) The test unit number.
 - (CC) The name of the person conducting the test.
 - (DD) The results of all tests.
 - (EE) Any other information that may be necessary to judge the adequacy of the seaming and patching procedures.
- (E) Geomembrane seams that cannot be nondestructively tested are overlain with geomembrane material of identical type.
- (F) Destructive seam testing is performed at the site, or at an independent laboratory, according to the approved construction plans, and meets the following requirements:
- (i) Testing is performed:
 - (AA) on a minimum of one (1) test per five hundred (500) feet of seam length if the seam is welded with a fusion weld;
 - (BB) on a minimum of one (1) test per four hundred (400) feet of seam length if the seam is welded with an extrusion weld;
 - (CC) on a minimum of one (1) test for each seaming machine; and
 - (DD) as otherwise required by the commissioner.
 - (ii) Destructive seam testing includes:
 - (AA) a shear strength test; and
 - (BB) a peel strength test.
 - (iii) If a seam location fails destructive testing:
 - (AA) the seam is reconstructed over a minimum of ten (10) feet in each direction from the site of the failed test;
 - (BB) additional samples are taken for testing; and

(CC) reconstruction and retesting is repeated, as necessary, until at least eighty percent (80%) of the samples at the test location pass the destructive seam test.
(Solid Waste Management Board; 329 IAC 10-17-7; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1834; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2776; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3815)

SECTION 60. 329 IAC 10-17-9 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-17-9 Drainage layer component of the liner; construction and quality assurance/quality control requirements

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-20-2; IC 36-9-30

Sec. 9. (a) If the drainage layer material is to consist of soil or soil like materials, the project engineer shall ensure the following:

- (1) A grain size analysis and hydraulic conductivity test is completed **during the installation** for soil drainage layer materials at frequencies described in Table 1 of this subsection.
- (2) The quality control and quality assurance testing of the soil drainage material meets the requirements of the approved construction plans.
- (3) The soil drainage layer is constructed and graded in accordance with the approved construction plans.
- (4) Carbonate content testing must be performed prior to and during the installation of a drainage layer, if the drainage material is limestone (CaCO_3) or dolomite/dolostone ($\text{Ca-Mg}(\text{CO}_3)_2$) or from a source likely to contain a high percentage of carbonate materials. The test must be performed:**
 - (A) at a pH of less than seven (7); and**
 - (B) at every three thousand (3,000) cubic yards, with a carbonate content no greater than fifteen per cent (15%).**
 - (C) Higher carbonate content may be allowed in drainage layer materials if a demonstration is submitted showing that the hydraulic conductivity of the drainage layer will not be decreased below the minimum of 10^{-1} cm/second because of carbonate mineral precipitation.**

TABLE 1

Soil Drainage Layer Materials:
 Minimum Testing Frequencies

| Item Tested | Minimum Frequency |
|-----------------------------------|--|
| Grain size (to the No. 200 sieve) | 1 test per 1,500 cubic yards (2,400 per ton) |
| Hydraulic conductivity test | 1 test per 3,000 cubic yards (4,800 per ton) or minimum of 3 tests |

(b) If the drainage layer material is to consist of a geosynthetic material, the project engineer shall ensure the following:

- (1) The geosynthetic drainage layer material is chemically compatible with the waste to be deposited and with the leachate that will be generated.
- (2) Effective liquid removal will be maintained by the drainage layer throughout the active life, closure and post-closure period of the MSWLF.
- (3) The geosynthetic drainage layer is constructed and installed in accordance with the approved construction plans.
- (4) The quality control and quality assurance testing of the geosynthetic drainage material meets the requirements of the approved construction plans.
- (5) Results of the following tests, or equivalent tests where applicable to a specific product, and the following criteria are adequately addressed:
 - (A) If the geosynthetic material is a geotextile:
 - (i) grab elongation test;

- (ii) grab tensile strength test;
- (iii) puncture resistance test;
- (iv) trapezoidal tear test;
- (v) ultraviolet (five hundred (500) hours) resistance test;
- (vi) abrasion or tumble test;
- (vii) permittivity test;
- (viii) apparent opening size (AOS) test;
- (ix) long term flow (clogging) test;
- (x) gradient ratio (clogging) test;
- (xi) the nature of the fibers (i.e., continuous filament or staple fibers);
- (xii) the chemical compatibility of the geotextile;
- (xiii) the polymer composition;
- (xiv) the structure of the geotextile (i.e., woven or nonwoven);
- (xv) thermal degradation and oxidation in extreme acidic conditions;
- (xvi) pH resistance of the geotextile;
- (xvii) creep;
- (xviii) resistance to extreme temperature;
- (xix) resistance to bacteria;
- (xx) resistance to burial deterioration; and
- (xxi) other tests or information that may become necessary, as determined by the commissioner, **to demonstrate the integrity of the drainage layer component.**

(B) If the geosynthetic material is a geonet:

- (i) tensile strength test;
- (ii) hydraulic transmissivity test;
- (iii) specific gravity test;
- (iv) melt flow index test;
- (v) carbon black content test;
- (vi) abrasion or tumble test;
- (vii) creep;
- (viii) thickness;
- (ix) chemical compatibility;
- (x) resistance to extreme temperature;
- (xi) resistance to bacteria;
- (xii) resistance to burial deterioration; and
- (xiii) other tests or information that may become necessary, as determined by the commissioner, **to demonstrate the integrity of the geosynthetic material.**

(Solid Waste Management Board; 329 IAC 10-17-9; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1837; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3818)

SECTION 61. 329 IAC 10-17-12 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-17-12 Protective cover component of the liner; construction and quality assurance/quality control requirements

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 12. (a) The protective cover must be installed in a single lift with no compaction. Quality control and quality assurance testing on the protective cover must include the following tests conducted at the indicated frequencies during installation of the protective cover:

- (1) Grain size distribution to the number 200 sieve must be performed for every one thousand five hundred (1,500) cubic yards of protective cover placed on the liner system.
- ~~(2) Carbonate content testing must be performed:~~

~~(A) at a pH of four (4.0); and~~
~~(B) every three thousand (3,000) cubic yards;~~
and the carbonate content must be no greater than five percent (5%).
~~(3)~~ (2) Any additional tests as specified in the construction plans or as determined by the commissioner **to assure quality control and quality assurance.**

(b) If the geotextile described in section 11(b) of this rule is used as an alternative to the protective cover, the project engineer shall ensure the following:

(1) Proper quality control and quality assurance testing is performed on the geotextile, and adequate results are obtained for the following tests, where applicable, or equivalent tests, performed in accordance with section 17 of this rule:

- (A) Grab elongation test.
- (B) Grab tensile strength test.
- (C) Puncture resistance test.
- (D) Trapezoidal tear test.
- (E) Ultraviolet (five hundred (500) hours) resistance test.
- (F) Abrasion or tumble test.
- (G) Other tests that may become necessary as determined by the commissioner **to demonstrate the integrity of the geotextile.**

(2) The following criteria are addressed when determining the quality of the geotextile:

- (A) The nature of the fibers (i.e., continuous filament or staple fibers).
- (B) The chemical compatibility of the geotextile.
- (C) The polymer composition.
- (D) The structure of the geotextile (i.e., woven or nonwoven).
- (E) Thermal degradation and oxidation in extreme acidic conditions.
- (F) pH resistance of the geotextile.
- (G) Creep.
- (H) Resistance to extreme temperatures.
- (I) Resistance to bacteria.
- (J) Resistance to burial deterioration.
- (K) Other criteria that may become necessary as determined by the commissioner **to determine the quality of the geotextile.**

(Solid Waste Management Board; 329 IAC 10-17-12; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1838; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3819)

SECTION 62. 329 IAC 10-17-18 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-17-18 CQA/CQC preconstruction meeting

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 18. For the purposes of ensuring coordination of all aspects of CQA/CQC, a preconstruction meeting must be held **upon the award of the prior to construction contract. in any area not approved to accept solid waste.** The preconstruction meeting must involve all relevant persons involved with implementing the CQA/CQC plan, such as the MSWLF owner or operator, the design engineer, CQA/CQC personnel, and the primary construction contractor. The preconstruction meeting may be used to accomplish the following:

- (1) Provide each involved entity with all relevant CQA/CQC documents and supporting information addressing the site-specific CQA/CQC plan and its role relevant to the construction plans.
- (2) Review the responsibilities, authorities, and lines of communication for each of the involved entities.
- (3) Review the established procedures for observation and testing, including sampling strategies identified in the CQA/CQC plan.
- (4) Review the established acceptance and rejection criteria as specified in the CQA/CQC plan.

- (5) Review the approved specifications, with methods and means for decision making and resolution of problems pertaining to data.
- (6) Review methods for documenting and reporting all inspection data.
- (7) Discuss procedures for the storage and protection of MSWLF construction material on-site.
- (8) Organize for relevant persons a site walk-around to review the project site layout, construction material and equipment storage locations.
- (9) Discuss the CQA/CQC plan and other relevant issues and concerns.

(10) Discuss storm water management practices and sedimentation control appropriate for the construction work or as outlined in the construction specifications and plans.

(Solid Waste Management Board; 329 IAC 10-17-18; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1840; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3820)

SECTION 63. 329 IAC 10-19-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-19-1 Preoperational requirements and operational approval

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 1. (a) A new MSWLF or lateral expansion that is permitted under this article must not accept solid waste before the owner, operator, or permittee submits to the commissioner a certification of completion. The certification of completion is a written statement by the owner, operator, or permittee that certifies the following:

- (1) A construction certification report (CCR) has been prepared by a professional engineer and has been submitted to the commissioner. In the CCR, the professional engineer shall certify that the construction of the liner system components proceeded in accordance with the approved construction plans. The CCR must also include the following items:

- (A) The following information for all components of the liner system:

- (i) Documentation provided by the manufacturer that describes quality control and quality assurance tests conducted on raw materials and products used in the construction of the liner system component, including a description of methods for sample selection and the frequency with which tests were conducted.
- (ii) Certification that the CQA/CQC tests were conducted in accordance with the approved construction plan, or as specified by the commissioner.
- (iii) A summary of the results of all testing, including documentation of any failed test results.
- (iv) A description of corrective measures taken in response to failed tests.
- (v) A description of all retesting conducted and the results of those tests.
- (vi) A description of the previous relevant work experience and qualifications of the field crew foreman in charge of liner installation.

- (B) The following information for the soil component of the liner system:

- (i) All measures taken to prevent or remedy soil liner damage from either desiccation or freezing, both during and after construction.
- (ii) The results of all testing required in Table 1 and Table 2 of 329 IAC 10-17-5(a), including:
 - (AA) description of steps taken to correct any improperly constructed soil material; and
 - (BB) test frequencies.
- (iii) Certification that construction quality control testing indicated the soil liner material met the applicable hydraulic conductivity requirements.

- (C) The following information for the geomembrane component of the liner system:

- (i) Certification that the test seams were made:
 - (AA) at the start of work for each seaming crew;
 - (BB) after every four (4) hours of continuous seaming;
 - (CC) every time seam equipment is changed;
 - (DD) when significant changes in geomembrane temperature are observed; and
 - (EE) as additionally required in the approved construction plans.

- (ii) Certification that field seams were nondestructively tested using a method in accordance ~~with the Geosynthetic Research Institute (GRI); the American Society for Testing and Materials (ASTM); the National Sanitation Foundation (NSF); current industry standards;~~ or with construction plans and specifications.
- (iii) Certification that all seams that could not be nondestructively tested were overlain with geomembrane material of the same type.
- (iv) Certification that a professional engineer monitored all nondestructive testing, informed the installer of any required repairs, and inspected the seaming and patching operation for uniformity and completeness.
- (v) Records of:
 - (AA) the locations where samples were taken;
 - (BB) the name of the person conducting the tests; and
 - (CC) the results of all tests.
- (D) If an optional drainage layer filter is used in the liner system design, an assessment of the geotextile filter that includes the following information:
 - (i) Polymer property density.
 - (ii) Polymer type.
 - (iii) Ultraviolet stability.
 - (iv) Mechanical properties.
 - (v) Tensile strength.
 - (vi) Permittivity.
 - (vii) Apparent opening size.
 - (viii) Puncture strength.
- (E) Test results documenting the following:
 - (i) The chemical compatibility of the geomembrane and leachate collection pipes with waste and leachate. Relevant compatibility test results may be obtained from the manufacturer. If deemed necessary by the commissioner, additional compatibility testing may be required.
 - (ii) Adequate transmissivity upon the maximum compressive load for any geosynthetic material used in a drainage layer.
- (2) Certifications by a professional engineer or a ~~certified~~ **licensed** professional geologist, whichever is appropriate, have been submitted to the commissioner to certify the following:
 - (A) Initial site development and construction has been completed in accordance with the plot plans specified under 329 IAC 10-15-2 and in accordance with any preoperational conditions imposed as conditions in the facility permit, **including all permanent storm water control measures.**
 - (B) Identifiable boundary markers have been established that delineate the approved facility boundaries and the solid waste boundary.
 - (C) Permanent on-site benchmarks have been established with latitude and longitude and Universal Transverse Mercator coordinates, where available, and with vertical (mean sea level elevation) and horizontal control, such that no portion of the constructed solid waste disposal area is further than one thousand (1,000) feet from a benchmark, unless a greater distance is:
 - (i) necessary to avoid placement of benchmarks on filled areas; and
 - (ii) approved by the commissioner.
 - (D) The installation of all required ground water monitoring wells and piezometers and any required road leading to a **monitoring** well or piezometer has been completed.
- (3) The following items have been submitted to the commissioner:
 - (A) A plot plan indicating location, mean sea level elevations, and identification of all ground water monitoring wells and piezometers.
 - (B) A copy of all ground water monitoring well and piezometer logs, including diagrammatical drilling logs and diagrammatical design and construction logs.
 - (C) From each **ground water monitoring** well in the monitoring system, the results of the first of the four (4) required water level measurements and four (4) independent ground water sampling analyses for the constituents in 329 IAC 10-21-15(a) (Table 1A). **Piezometers must be included to collect static water level measurements if part of the ground water monitoring system.** The remaining water level measurements and

sampling analyses must be submitted ~~along with an initial statistical evaluation of the ground water quality data,~~ no later than six (6) months after the initial receipt of waste at the MSWLF unit.

(D) A ground water potentiometric surface map or a flow map, as described under 329 IAC 10-21-1(p).

(E) All financial responsibility documents have been executed and delivered to the department in the form and amount specified.

(4) All applicable post construction care procedures were followed.

(b) Upon satisfying all the requirements of subsection (a), a new MSWLF or lateral expansion permitted under this article may begin accepting waste in accordance with this article and with any additional permit conditions, unless the commissioner denies operational approval within twenty-one (21) days of receipt of the certification of completion. *(Solid Waste Management Board; 329 IAC 10-19-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1843; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2782; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3822)*

SECTION 64. 329 IAC 10-20-3 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-3 Signs

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 3. (a) For all MSWLFs, a sign of at least sixteen (16) square feet must be erected at each MSWLF entrance. The sign must identify the following:

- (1) The MSWLF's name.
- (2) The operating schedule.
- (3) The type of solid waste land disposal facility.
- (4) The MSWLF permit number.
- (5) The name and phone number of a designated emergency contact person to be contacted in case of an emergency.

(b) For purposes of subsection (a)(5), the designated emergency contact person shall be the following:

- (1) Authorized to respond to a reported emergency or be capable of contacting a person authorized to respond to a reported emergency.
- (2) One (1) of the following:
 - (A) An employee or contractor of the facility operator.
 - (B) An answering service who can contact facility emergency personnel.
 - (C) For a municipally owned facility, a local emergency entity and telephone number may be used.

(c) Traffic signs or other devices, as needed, must be provided to promote an orderly traffic pattern to and from the discharge area.

(d) The operator shall post a notice near the main entrance of a new MSWLF when construction is occurring. The notice must be maintained in a legible condition and contain the following information:

- (1) The on-site location of a copy of the completed MSWLF operating permit available for viewing.**
- (2) Name, telephone number, and address of a local designated emergency contact person.**
- (3) Location of the construction plan if the site does not have an on-site location to store the plan.**

(Solid Waste Management Board; 329 IAC 10-20-3; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1845; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2784; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3824)

SECTION 65. 329 IAC 10-20-8 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-8 Records and reports

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 24-6; IC 36-9-30

Sec. 8. (a) The owner, operator, or permittee of a MSWLF shall record and retain at the MSWLF, in an operating record or in an alternative location approved by the commissioner, all MSWLF records, reports, and plans required by this article, including the following:

- (1) An up-to-date copy of the plans and specifications approved by the commissioner in granting the permit.
- (2) A copy of the current permit approved by the commissioner, including any modifications submitted to the commissioner and the response of the commissioner.
- (3) A plot plan that must be updated quarterly. The owner, operator, or permittee shall maintain a log indicating dates of quarterly updates. The plot plan must describe the following:
 - (A) Areas of excavation.
 - (B) Areas of current filling.
 - (C) Areas under intermediate cover.
 - (D) Filled areas lacking final cover.
 - (E) Finished areas with final cover; contoured and seeded.

(4) Copies of department operating inspection reports during the preceding twelve (12) months.

(5) An inspection log as required by section 28(c) of this rule.

(6) A contour map resulting from the annual survey required under section 24(c) of this rule.

(7) ~~All special waste disposal notifications, certifications, verification notices, notices of denial, site-specific approvals, documentation of waste determinations, and quarterly reports required under 329 IAC 10-8.1.~~

Documentation used to determine compliance with section 14.1(b)(1) of this rule.

(8) Any location restriction demonstration required under 329 IAC 10-16.

(9) Inspection records, training procedures, and notification procedures required by section 23 of this rule.

(10) Gas monitoring results from monitoring and any remediation plans required by section 17 of this rule.

(11) Any gas condensate testing results and amounts generated recorded on a weekly basis.

(12) Any leachate testing results and weekly leachate pumping quantities.

(13) Any MSWLF design documentation for placement of leachate or gas condensate in a MSWLF as required under section 27(a)(2) of this rule.

(14) Any demonstration, certification, finding, monitoring, testing, or analytical data required by 329 IAC 10-21. The owner, operator, or permittee shall maintain records of all monitoring information and monitoring activities, including the following:

- (A) The date, exact place, and time of the sampling or measurements.
- (B) The person or persons who performed the sampling or measurements.
- (C) The date or dates analyses were performed.
- (D) The person or persons who performed the analyses.
- (E) The analytical techniques or methods used.
- (F) The results of such measurements or analyses.

(15) Closure and post-closure care plans and any monitoring, testing, or analytical data as required by 329 IAC 10-22 and 329 IAC 10-23.

(16) Any cost estimates and financial assurance documentation required by 329 IAC 10-39.

(17) Under 329 IAC 11-15-4(b), the owner, operator, or permittee of the MSWLF to which the municipal waste is transported shall retain each manifest for one (1) year and send one (1) copy of each manifest to the commissioner within three (3) months after receiving the manifest. The manifests must be retained on-site at the MSWLF and must be made available to the commissioner's staff upon request.

(18) Monitoring records for storm water compliance.

(b) All information contained in the operating record and self-inspections must be furnished upon request to any representative of the commissioner.

(c) All reports submitted to the commissioner must be unbound or bound in a three-hole notebook and preferably copied on both sides of the pages.

(d) The commissioner may set alternative schedules for record keeping and notification requirements except for 329 IAC 10-16-1(d) and 329 IAC 10-21-13. (*Solid Waste Management Board; 329 IAC 10-20-8; filed Mar 14,*

1996, 5:00 p.m.: 19 IR 1846; filed Jan 9, 1998, 9:00 a.m.: 21 IR 1727, eff one hundred eight (180) days after filing with the secretary of state; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2785; eff Jul 10, 1998; errata filed Apr 8, 1998, 2:20 p.m.; 21 IR 2990; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3826)

SECTION 66. 329 IAC 10-20-11 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-11 Diversion of surface water and run-on and run-off control systems

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 11. (a) The owner, operator, or permittee of MSWLFs shall design, construct, and maintain the following:

(1) A run-on control system to prevent flow onto the active portion of the MSWLF during the peak discharge from a twenty-five (25) year storm.

(2) A run-off control system from the active portion of the MSWLF to collect and control at least the water volume resulting from a twenty-four (24) hour, twenty-five (25) year storm.

(b) The owner, operator, or permittee of MSWLFs shall not deposit solid waste in standing or ponded water.

(c) Run-off from the active portion of the MSWLF must be handled in accordance with 327 IAC 15-5, 327 IAC 15-6, and the discharge must meet the effluent limitations of the National Pollutant Discharge Elimination System under 327 IAC 5. Storm water run-off leaving a facility must be discharged in a manner that does not cause or contribute to erosion or sedimentation or a violation of rules of the water pollution control board at 327 IAC 2-1-6(a).

(d) Appropriate measures shall be planned and installed as part of an erosion and sediment control system.

(e) All storm water quality measures and erosion and sediment controls necessary to comply with this rule must be implemented in accordance with the approved storm water pollution prevention plan.

(f) Monitoring requirements shall be as follows:

(1) Each discharge outfall, or representative discharge outfall, composed of storm water run-off and any other permitted discharge, shall be monitored as follows:

| Parameter | Units | Sample Type | Frequency |
|--|-------|-------------|-----------|
| Oil and grease | mg/l | grab | Annual |
| CBOD ₅ (Carbonaceous biochemical oxygen demand) | mg/l | grab | Annual |
| COD (Chemical oxygen demand) | mg/l | grab | Annual |
| TSS (Total suspended solids) | mg/l | grab | Annual |
| TKN (Total Kjeldahl nitrogen) | mg/l | grab | Annual |
| Total phosphorous | mg/l | grab | Annual |
| pH | s.u. | grab | Annual |
| Nitrate plus nitrite nitrogen | mg/l | grab | Annual |

(2) Each discharge outfall subject to subdivision (1) shall be monitored for any other pollutant which is reasonably expected to be present in the discharge, as well as for any other pollutant as requested by the commissioner.

(3) Facilities that have other pollutants limited by or required to be monitored under a NPDES discharge permit issued by the commissioner for any discharge shall also monitor the storm water grab sample for any additional parameters listed in that permit. This additional parameter requirement does not include

whole effluent toxicity testing, or other parameters required by another NPDES permit which are determined to be in concentrations below laboratory detection limitations.

(4) During the first year after the latest effective date of this section and prior to implementation of the SWP3, an owner, operator or permittee shall sample and analyze the discharge from the outfall identified in the approved pollution prevention plan. The monitoring data taken from this first year event shall be used by the owner, operator, or permittee as an aid in developing and implementing the SWP3.

Subsequent annual sampling data shall be used to verify the effectiveness of the SWP3 and will aid the permittee with revising the SWP3 and with the implementation of additional best management practices, as necessary.

(5) The commissioner may require an owner, operator, or permittee to sample additional storm events beyond the required five (5) annual events upon finding reasonable cause. The commissioner shall notify the facility in writing that additional sampling is required.

(6) A grab sample must be collected during the first thirty (30) minutes, or as soon thereafter as practicable.

(7) The pH measurement must be taken at the time the grab sample is collected and by using a portable pH meter that has been properly calibrated to the manufacturer's specifications and that provides results displayed in numeric units. A color comparison analysis for pH is not acceptable.

(8) There shall be a minimum of three (3) months between reported sampling events.

(9) Samples must be taken at a point representative of the discharge but prior to entry into surface waters of the state or a municipal separate storm sewer conveyance, unless an alternative location has been granted by the commissioner. For discharges that flow through on-site detention basins, samples shall be taken at a point representative of the discharge from the basin.

(10) All samples must be collected from a discharge resulting from a measurable storm event at least seventy-two (72) hours from the previous measurable storm event and, where feasible, where the duration and total precipitation does not exceed fifty percent (50%) from the average or median precipitation event in the area, as determined by the nearest United States National Weather Service Information Center.

Documentation of weather conditions that prevent sampling as described in this subsection must be provided to the commissioner.

(11) The analytical and sampling methods used must meet quality assurance and quality control requirements.

(12) Run-off events resulting from snow or ice melt should not be sampled and shall not be used to meet the minimum annual monitoring requirements.

(g) Reporting requirements shall be as follows:

(1) All samples must be reported as a value of concentration.

(2) For each measurement or sample taken under this rule, the owner, operator or permittee of the facility shall record and submit the following information to the commissioner:

(A) The exact place, date, and time of the start of the discharge, the magnitude of the storm event sampled in inches, and time of sampling.

(B) The duration between the storm event sampled and the end of the previous measurable storm event.

(C) The individual who performed the sampling or measurements.

(D) The dates the analyses were performed.

(E) The individual who performed the analyses.

(F) The analytical techniques or methods used.

(G) The results of all required analyses and measurements.

(H) A complete copy of the laboratory report, including chain-of-custody.

(3) All records and information resulting from the monitoring activities, including all records of analyses performed and calibration and maintenance of instrumentation, must be retained for a minimum of five (5) years following the expiration of the facility's permit, or longer if requested by the commissioner.

(4) An owner, operator or permittee shall submit sampling data results to the commissioner within thirty (30) days after laboratory analyses have been completed.

(5) An owner, operator or permittee of a facility that has a discharge which enters a municipal separate storm sewer shall also submit a copy of the sampling data results to the operator of the municipal system upon request.

(6) If an owner, operator or permittee monitors a pollutant more frequently than required by this rule, using analytical methods referenced in this rule, the results of such monitoring must be reported as additional information. Such increased frequency must also be indicated.

(Solid Waste Management Board; 329 IAC 10-20-11; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1848; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3827)

SECTION 67. 329 IAC 10-20-12 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-12 Erosion and sedimentation control measures; general requirements

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 12. (a) Erosion and sedimentation control measures must be instituted to minimize the off site migration of any sediment. All run-off from disturbed acreage must pass through a sedimentation basin or an approved alternative sediment control practice. The commissioner may require additional erosion and sediment control measures.

(b) A storm water or sedimentation basin or series of basins permitted and constructed under this article must be constructed in accordance with the following:

(1) Be designed to handle, simultaneously, the run-off resulting from the ten (10) year, twenty-four (24) hour precipitation event and the sediment storage volume required by subdivision (3).

(2) An appropriate combination of principal and emergency spillway shall be provided to discharge safely the run-off from a twenty-five (25) year, twenty-four (24) hour precipitation event with a minimum of two (2) feet of freeboard.

(3) Provide a minimum of three (3) years of sediment storage volume. The following requirements apply:

(A) Sediment must be removed from sedimentation basins when the volume of sediment accumulates to fifty percent (50%) or more of the designed sediment storage volume.

(B) A sediment storage volume of less than three (3) years may be approved by the commissioner if an annual approved maintenance program will be performed.

(4) Provide a detention time of at least twenty-four (24) hours for the ten (10) year, twenty-four (24) hour precipitation event. A detention time of less than twenty-four (24) hours may be approved by the commissioner if the following is demonstrated by the owner, operator, or permittee:

(A) The discharge will not result in the release of a significant quantity of sediment from the MSWLF.

(B) Will not violate any local, state, or federal laws pertaining to discharges.

(5) The principal spillway must be located at a height above the maximum elevation of the designed sediment storage volume required by subdivision (3).

(6) Discharge in compliance with all applicable state and federal laws.

(7) The length-to-width ratio of the flow path shall be 2:1 or greater from the inflow to the outflow. Baffles may be used within the basin to achieve this ratio.

(c) If deemed necessary by the commissioner, additional erosion and sediment control practices may be required in the drainage areas of permanent basins for the purposes of increasing the life of the basin and increasing the overall efficiency of removing sediment from run-off.

(d) Alternatives to the requirements in subsections (b) through (c) may be approved by the commissioner. Factors that will be considered include the following:

(1) The amount of water collected from disturbed areas and undisturbed areas.

(2) Use of erosion control measures on disturbed areas.

(3) Sedimentation control measures utilized in the drainageways.

(e) The commissioner may require the submittal of the following information for any storm water/sedimentation pond or basin to verify it is designed and constructed properly:

- (1) Basin plan view.
- (2) Typical cross section.
- (3) All the inlet and outlet elevations.
- (4) Assumptions used to size the basin.
- (5) Calculations used.
- (6) Justifications.

(f) A storm water pollution prevention plan must be prepared in accordance with 329 IAC 10-15-12. The plan must be updated whenever there is a change at the facility that would significantly affect the storm water discharges authorized under the facility permit. The plan must be kept on-site and must be available to the commissioner at the time of an on-site inspection. *(Solid Waste Management Board; 329 IAC 10-20-12; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1848; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2786; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3827)*

SECTION 68. 329 IAC 10-20-13 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-13 Cover; general provisions

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 13. (a) Except as provided in subsection (c), daily cover for MSWLFs must be earthen material or an alternative daily cover as allowed under section 14.1 of this rule. Intermediate cover for MSWLFs must be ~~Classification ML~~; earthen material or other suitable material approved by the commissioner to provide an adequate level of environmental protection. Final cover must be as specified in 329 IAC 10-22-6 or 329 IAC 10-22-7, whichever is applicable.

(b) Cover must be applied and maintained at MSWLFs in accordance with the applicable requirements of this rule and 329 IAC 10-22. Other provisions for cover may be approved by the commissioner if it can be demonstrated that an alternate cover or site design will provide an adequate level of environmental protection.

(c) Daily and intermediate cover for MSWLFs without a:

- (1) leachate collection system; and
- (2) composite liner;

must be soil of Unified Soil Classification ML, CL, MH, CH, or OH, or other suitable material approved by the commissioner to provide an adequate level of environmental protection. Final cover must be as specified in 329 IAC 10-22-6 or 329 IAC 10-22-7, whichever is applicable. *(Solid Waste Management Board; 329 IAC 10-20-13; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1849; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3828)*

SECTION 69. 329 IAC 10-20-20 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-20 Leachate collection, leachate removal, and leachate disposal

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 20. (a) The owner, operator, or permittee of an MSWLF ~~that has a previously existing leachate collection or leachate removal system shall develop~~ **have** a leachate contingency plan. ~~within six (6) months of the effective date of this rule.~~ At a minimum, the plan must address all the requirements listed in 329 IAC 10-15-11(a).

(b) The owner, operator, or permittee shall:

- (1) operate the leachate collection or leachate removal system in compliance with the design standards and plans specified in 329 IAC 10-15 and 329 IAC 10-17-8 through 329 IAC 10-17-9;

- (2) monitor and maintain the leachate collection or leachate removal system as required in the leachate contingency plan under 329 IAC 10-15-11(a)(1) through 329 IAC 10-15-11(a)(2) or subsection (a); and
- (3) implement the leachate contingency plan required under 329 IAC 10-15-11(a)(4) or subsection (a), if the leachate collection or leachate removal system is not operational or leachate levels are exceeded.

(c) Any discharge or disposal of collected leachate must be accomplished in accordance with all applicable local, state, and federal laws.

(d) The leachate contingency plans required by 329 IAC 10-15-11 and subsection (a) must be retained in the operating record on-site at the MSWLF as required by section 8(a) of this rule and be made available to representatives of the department upon request. (*Solid Waste Management Board; 329 IAC 10-20-20; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1852; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3832*)

SECTION 70. 329 IAC 10-20-24 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-24 Survey requirements

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 24. (a) The owner, operator, or permittee of an MSWLF shall maintain the series of identifiable boundary markers required under 329 IAC 10-19-1(a)(2)(B) to delineate the approved solid waste land disposal facility **boundaries boundary** and approved solid waste boundaries for the life of the MSWLF.

(b) The owner, operator, or permittee shall maintain the on-site benchmarks required under 329 IAC 10-19-1(a)(2)(C) so that no portion of the proposed solid waste disposal area is further than one thousand (1,000) feet from a benchmark unless a greater distance is necessary to avoid the placement of benchmarks on filled areas and is approved by the commissioner.

(c) The owner, operator, or permittee shall conduct an annual survey between October 1 and December 31 of each year for the purpose of establishing a contour map that indicates existing contours of the MSWLF and the existing limits of solid waste disposed at the MSWLF. The contour map must be done at the same scale as the final contour map required under 329 IAC 10-15-2. The contour map must indicate the day the survey was conducted and must be submitted to the department by February 15 of the year following the survey in a paper copy form as required by ~~329 IAC 10-15-2(b). In addition to the paper copy, a copy may also be submitted electronically.~~ **section 8 of this rule.**

(d) The owner, operator, or permittee of a currently permitted MSWLF shall submit a present contour map and a proposed final contour map on paper copy form as required by 329 IAC 10-15-2(b). In addition to the paper copy forms, a copy may also be submitted electronically. No subsequent annual submissions of the final contour map will be necessary unless there is a change to the approved final contours. (*Solid Waste Management Board; 329 IAC 10-20-24; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1853; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2789; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3834*)

SECTION 71. 329 IAC 10-20-26 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-26 Surface water requirements

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 26. (a) The owner, operator, or permittee of an MSWLF shall not cause a discharge of pollutants into waters of the state, including wetlands, that violates any requirements of **rules of the water pollution control board at 327 IAC** and the Clean Water Act, including the National Pollutant Discharge Elimination System requirements, under Section 402 of the Clean Water Act, 33 U.S.C. 1342, as amended October 31, 1992.

(b) The owner, operator, or permittee of an MSWLF shall not cause the discharge of a nonpoint source of pollution to waters of the United States, including wetlands, that violates any requirement of an area wide or statewide water quality management plan that has been approved under Section 208, 33 U.S.C. 1288, as amended February 4, 1987, or Section 319, 33 U.S.C. 1329, as added February 4, 1987, of the Clean Water Act.

(c) Proper storage and handling of materials such as fuels or hazardous wastes, and spill prevention and cleanup measures shall be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality. (*Solid Waste Management Board; 329 IAC 10-20-26; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1853; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3835*)

SECTION 72. 329 IAC 10-20-28 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-20-28 Self-inspections

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 28. (a) The owner, operator, or permittee of an MSWLF shall monitor and inspect the MSWLF a minimum of at least twice each month for malfunctions, deteriorations, operator errors, discharges, and leachate outcroppings that may cause a release to the environment or a threat to human health. **Inspections shall include erosion and sedimentation control measures.**

(b) The owner, operator, or permittee shall promptly correct any deterioration or malfunction of equipment or structures or any other problems revealed by the inspections to comply with the MSWLF's permit and this article and to ensure that no environmental or human health hazard develops. Where a hazard is imminent or has already occurred, remedial action must be taken immediately to correct or repair the hazard.

(c) The owner, operator, or permittee shall record inspections on an inspection form provided by the department or at a minimum, on a form that includes the following:

- (1) The date and time of the inspection.
- (2) The name of the inspector.
- (3) A description of the inspection, including an identification of the specific equipment and structures inspected.
- (4) The observations recorded.
- (5) The date and nature of any remedial actions implemented or repairs made as a result of the inspection.

These records must be retained at the MSWLF for at least three (3) years from the date of inspection. (*Solid Waste Management Board; 329 IAC 10-20-28; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1854; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3835; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535*)

SECTION 73. 329 IAC 10-21-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-1 General ground water monitoring requirements

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 1. (a) The owner, operator, or permittee of MSWLFs shall comply with the ground water monitoring requirements of this rule according to the following schedule:

- (1) Existing MSWLF units and lateral expansions less than or equal to two (2) miles from a drinking water surface or subsurface intake must be in compliance with the applicable ground water monitoring requirements specified in this rule by the effective date of this rule.
- (2) Existing MSWLF units and lateral expansions greater than two (2) miles from a drinking water surface or subsurface intake must be in compliance with the applicable ground water monitoring requirements specified in this rule by October 9, 1996.
- (3) New MSWLF units must be in compliance with the applicable ground water monitoring requirements specified in this rule before waste can be placed in the unit.

(b) Alternative methods, procedures, or equipment to those prescribed in this rule may be used provided the selected alternative yields results or measurements that are equivalent in accuracy and reliability and the use of the alternative is approved by the commissioner. **Alternative ground water monitoring devices or sampling devices may be approved by the commissioner if it is demonstrated that the alternative will provide results that represent ground water quality from beneath the MSWLF in an equivalent manner than could be provided by ground water monitoring wells. Regardless of location of the alternative monitoring device, the monitoring boundary, for the purposes of 329 IAC 10-21-13, must remain within fifty (50) feet of the solid waste boundary. Any such demonstration must include the following:**

- (1) A complete description of the device and how it complies or differs from 329 IAC 10-21-1 through 13.**
- (2) A scientifically valid justification for any deviations from 329 IAC 10-21.**
- (3) Any references that indicate the proficiency of the device under similar conditions.**
- (4) Provision for the construction plan for the device(s) to be approved prior to the actual construction.**
- (5) A complete description of the proposed location of the device(s), or the methods of determining the most adequate location, including proof of the facility's control, accessibility for operations and inspections, and security of each location.**

(c) The number, spacing, and location of ground water monitoring wells **and piezometers** for an existing MSWLF must comply with the MSWLF's permit. The number, spacing, and location of ground water monitoring wells **and piezometers** for new MSWLFs must meet the requirements of 329 IAC 10-15-5.

(d) All ground water monitoring wells **and piezometers** must be affixed with permanent identification that uniquely identifies each **monitoring** well at the MSWLF. The owner, operator, or permittee shall:

- (1) number;
- (2) label; and
- (3) maintain labels;

on all ~~ground water~~ monitoring wells **and piezometers**.

(e) Ground water monitoring wells **and piezometers** must be accessible and visible at all times. Access to ~~ground water monitoring~~ wells through on-site roads must be available, regardless of weather conditions. Access to monitoring wells for four (4) wheel drive vehicles must be provided to ensure vehicle access throughout any season of the year. Vegetation must be controlled on the on-site roads and around **the monitoring wells and piezometers**. Access to all ~~ground water~~ monitoring wells **and piezometers** approved by the commissioner must be restricted to operating personnel, department personnel, and persons contracted by the owner, operator, or permittee to collect samples.

(f) Ground water monitoring wells, **piezometers**, and equipment must be properly maintained to ensure representative ground water samples. The owner, operator, or permittee must practice proper maintenance procedures, including the following:

- (1) Keep ~~all the ground water monitoring~~ wells securely capped and locked when not in use. The owner, operator, or permittee shall maintain all the caps and locks.
- (2) Make repairs as necessary to correct any wear, decay, severe corrosion, or physical damages that are observed on or in the **ground water monitoring** well, **piezometer**, or dedicated equipment and submit to the commissioner documentation that the necessary repairs have been made to maintain the integrity of the **monitoring** well.
- (3) Maintain proper drainage around each **ground water monitoring** well head **and piezometer**. **Repairs as necessary must be made to by the use of a concrete pad apron around the protective casing of each the monitoring wells to prevent water infiltration or ponding.**
- (4) Control vegetation height around each of the wells ~~as required in 329 IAC 10-20-2(d).~~
- (5) Redevelop a **ground water monitoring** well that has accumulated a silt volume **that may compromise the quality of the sample of more than twenty percent (20%) of the screen length.** The **monitoring** well must be redeveloped prior to the next sampling event. **One of the following procedures must be used to determine the need to redevelop the monitoring well:**

(A) Any regularly scheduled total depth measurement indicates that more than twenty percent (20%) of the screen length has been filled with silt. Any schedule of soundings less often than semi-annual must be approved by the commissioner and based on geohydrological characteristics of the aquifer or known rate of down-hole siltation;

(B) Semi-annual field tests indicate an order-of-magnitude rise in turbidity or suspended solids for sampling points using dedicated submersed equipment; or

(C) Any other procedure that has been approved by the commissioner.

(g) If a ground water monitoring well **or a piezometer** is destroyed or otherwise fails to properly function, the owner, operator, or permittee must comply with the following requirements:

(1) The owner, operator, or permittee shall provide the commissioner with a written report within ten (10) days of discovering that the **ground water monitoring well or piezometer** is destroyed or not properly functioning. The report must include the following information:

(A) The date of discovery that a **ground water monitoring well or piezometer** is destroyed or is not properly functioning.

(B) The probable cause of **ground water monitoring well or piezometer** destruction, damage, or malfunction.

(C) A proposed repair or replacement plan, in accordance with subdivision (2) and with section 4 of this rule, that is subject to the commissioner's approval.

(2) Within thirty (30) days after receiving the commissioner's approval of the plan submitted under subdivision (1)(C), the **ground water monitoring well or piezometer** must be repaired or replaced in accordance with the following:

(A) If the **ground water monitoring well or piezometer** is repaired, the following requirements must be fulfilled:

(i) The owner, operator, or permittee shall submit to the commissioner a description of the repair methods.

(ii) The owner, operator, or permittee shall submit to the commissioner the revised design and construction diagram.

(B) If the ground water monitoring well **or piezometer** is replaced, the following requirements must be fulfilled:

(i) The original ground water monitoring well **or piezometer** must be properly abandoned in accordance with subsection (i).

(ii) A description of installation methods for the replacement of all pertinent ground water monitoring wells **or piezometers**, a **monitoring well and piezometer** design and construction diagram, and the borehole drilling log must be submitted to the commissioner.

(iii) Replacement ground water monitoring wells or piezometers must meet the design requirements of 329 IAC 10-21-4.

(iv) Replacement ground water monitoring wells or piezometers constructed within fifteen (15) feet of the original monitoring well or piezometers may have earthen material sampling and earthen material sample testing requirements waived if:

(AA) the original ground water monitoring well or piezometer earthen material sampling and earthen material sample testing complies with 329 IAC 10-21-4; and

(BB) the waiver is approved by the commissioner.

(3) If discovery of a **ground water monitoring well or piezometer** failure coincides with the time of a scheduled sampling event, the failed monitoring well **or piezometer** must be sampled immediately after it has been repaired or replaced.

(h) The owner, operator, or permittee shall abandon and replace a ground water monitoring well if:

(1) the ground water monitoring well has a permeable or semipermeable annular sealant; or

(2) any of the following details of the ground water **monitoring well** construction are not available:

(A) Screened interval.

(B) Annular sealant material.

(C) Borehole and casing diameters.

(D) Casing and screen material.

- (E) Ground elevation and the reference mark elevation.
- (F) Outside casing diameter and depth.
- (G) Filter pack material.

(i) The owner, operator, or permittee shall notify the commissioner in writing and obtain written approval to decommission or abandon any ground water monitoring well **and piezometer**. Abandonment procedures must comply with the following:

- (1) Abandonment procedures must be:
 - (A) in compliance with ~~310 IAC 16-10-2~~ **312 IAC 13-10-2** of the department of natural resources; or
 - (B) an alternative procedure approved by the commissioner.
- (2) Methods of abandonment must ensure that slurry does not bridge or become obstructed and that the borehole is completely sealed.
- (3) Attempts must be made to remove the entire casing from the **ground water monitoring well or piezometer** to be abandoned, if there is evidence that the integrity of the annulus between the borehole and **monitoring well or piezometer** casing has been compromised.
- (4) Accurate records of the location and abandonment procedures must be maintained in the operating records.

(j) All ground water monitoring wells that have been approved by the commissioner must be used to obtain ground water to be analyzed for the purpose of this rule.

(k) The commissioner may require additional ground water monitoring wells **and piezometers** during the active life, closure, or post-closure care period of the MSWLF if:

- (1) ground water flow data indicate that ground water flow directions are other than anticipated in the ground water monitoring system design;
- (2) further evaluation of the hydrogeology of the MSWLF determines that additional **ground water monitoring wells or piezometers** are needed; or
- (3) additional **ground water monitoring wells and piezometers** are necessary to achieve compliance with ground water monitoring standards under 329 IAC 10-15-5.

(l) The ground water monitoring boundary must be located:

- (1) within the property line; and
- (2) within fifty (50) feet of the solid waste boundary that has been approved by the commissioner for final closure, except where fifty (50) feet is not possible because of physical obstacles or geology. If the owner, operator, or permittee chooses to use intrawell comparison procedures to evaluate the ground water data, the monitoring boundary shall be considered to be at the location of each ground water monitoring well designated for the detection monitoring program.

(m) The number of independent ground water samples collected to establish background ground water quality data must be consistent with the appropriate statistical procedures in accordance with section 6 of this rule.

(n) Background ground water quality may be established at ground water monitoring wells that are not located hydraulically upgradient from the MSWLF solid waste boundary if, as determined by the commissioner:

- (1) hydrogeologic conditions do not allow the owner, operator, or permittee to determine which **ground water monitoring** wells are hydraulically upgradient; or
- (2) sampling at other **ground water monitoring** wells will provide an indication of background water quality that is as representative or more representative than that provided by the upgradient **monitoring** wells.

(o) If contamination is detected in any ground water monitoring well used to establish background ground water quality, the contamination must be investigated, within the MSWLF's facility boundary, to the extent necessary to determine that the MSWLF is not the cause of contamination. If an investigation reveals that the contamination is caused by one (1) or more MSWLF units within the MSWLF, the owner, operator, or permittee must:

- (1) further assess and investigate the contamination, as specified under section 10 of this rule; and

(2) use any **ground water** monitoring well in which the contamination is detected as a downgradient **monitoring** well in all ground water monitoring programs.

(p) Each time ground water samples are collected from ground water monitoring wells at the monitoring boundary, the owner, operator, or permittee shall prepare and submit to the commissioner ground water potentiometric - surface maps, or flow maps, of the aquifer being monitored at the site. Except for subdivisions (5), (11), and ~~(13)~~ **(12)**, which may be presented in tabular form accompanying the maps, each map must indicate the following:

- (1) A clear identification of the contour interval for the potentiometric-surface or water table surface of each aquifer being monitored at the MSWLF.
- (2) The ground water monitoring wells **and piezometers**:
 - (A) considered to be upgradient **and background**;
 - (B) considered to be downgradient; and
 - (C) for which there has been no determination due to the hydrogeologic complexities.
- (3) Each ground water monitoring well's identification and location.
- (4) Each piezometer's identification and location.
- (5) The static water elevations at each ground water monitoring well, referenced to mean sea level and measured to the nearest one-hundredth (0.01) foot.
- (6) Real property boundaries, facility boundaries, and the solid waste boundaries.
- (7) The identification of each aquifer through either its title or its elevation.
- (8) The MSWLF's name and county.
- (9) The map scale and a north arrow.
- (10) Ground water flow arrows.
- (11) The date and time of the measurements for each of the **ground water monitoring wells and piezometers**.
- (12) The elevation of the ground surface and the top of the casing at each **ground water monitoring** well and piezometer. The elevation of the referenced mark located on top of the casing of each ground water monitoring well and piezometer must be surveyed to the nearest plus or minus one-hundredth (± 0.01) foot. The referenced mark must be used to measure static water levels.
- (13) The following information, upon request by the commissioner:
 - (A) An updated site surface topography and surface water drainage patterns as described under 329 IAC 10-15-4(b)(12) if the potentiometric surface being evaluated is influenced by surface topography.
 - (B) All water wells and surface water bodies used as a drinking water source within one-fourth ($\frac{1}{4}$) mile of the solid waste boundary.
 - (C) Any other information the commissioner determines to be necessary, **including ground water flow gradient and velocity**, to evaluate the map information.
- (14) **Unless the commissioner deems necessary, potentiometric surface maps are not required to be submitted for the following reasons:**
 - (A) **When very few ground water monitoring wells are required to be sampled to establish background for the constituents listed in Table 1A under 329 IAC 10-21-15(a).**
 - (B) **When very few ground water monitoring wells need to be sampled to verify a preliminary exceedance.**
 - (C) **When very few ground water monitoring wells are required to be sampled under 329 IAC 10-21-10(b)(1) or 329 IAC 10-21-10(e).**
 - (D) **When very few ground water monitoring wells need to be sampled to establish background under 329 IAC 10-21-10(b)(4).**

(q) Ground water must be monitored as required in sections 7, 10, and 13 of this rule. The sampling frequency must be as specified under:

- (1) section 7 of this rule for detection monitoring;
- (2) section 10 of this rule for assessment monitoring; and
- (3) section 13 of this rule for corrective action.

(r) All ground water monitoring wells that are so specified by the commissioner must have ground water samples collected and analyzed for the constituents identified in Table 1A, Table 1B, or Table 2, whichever is applicable. Ground water sampling must be done semiannually or at another frequency specified by the commissioner.

(s) (r) Each time ground water samples are collected from ground water monitoring wells at the monitoring boundary, the following requirements for static water elevations must be:

- (1) Obtained from each ground water monitoring well and each piezometer **required to be sampled for the applicable ground water monitoring program.**
- (2) Measured to the nearest one-hundredth (0.01) foot, and referenced to mean sea level.
- (3) Obtained as close in time as practical from each **ground water monitoring** well or piezometer prior to purging and sampling each **ground water monitoring** well. If such a purging and collection sequence is expected to affect the accuracy of the static water elevation measurements in any **ground water monitoring** well or piezometer in the ground water monitoring system, then water elevation measurements must be obtained prior to purging and sampling any **ground water monitoring** well.

(t) (s) The owner, operator, or permittee shall submit the following information to the commissioner within sixty (60) days of obtaining the ground water samples in a sampling event unless a verification sampling program, as described in section 8 of this rule, is implemented:

- (1) All static water elevations measured to the nearest one-hundredth (0.01) foot.
- (2) Ground water potentiometric-surface maps, or flow maps, as specified in subsection (p).
- (3) Two (2) unbound laboratory certified reports, including one (1) original copy, that include the following information, **unless otherwise specified by the commissioner:**
 - (A) The detection limit for each chemical constituent.
 - (B) The date samples were collected.
 - (C) The date samples were received by the laboratory.
 - (D) The date samples were analyzed by the laboratory.
 - (E) The date the laboratory report was prepared.
 - (F) The method of analysis used for each constituent.
 - (G) The sample identification number for each sample.
 - (H) The results of all sample analyses.
- (4) Field report sheets as described under section 2(b)(12) of this rule for each ground water monitoring well sampled and the field chain of custody form for each sample as described under section 2(b)(14) of this rule.
- (5) A report correlating sample identification numbers with the corresponding **ground water monitoring** well identification number and blank identification numbers.
- (6) An explanation of how the **ground water monitoring** well sampling sequence as described under section 2(a)(6) of this rule was established for the sampling event.
- (7) **Two (2) copies of** the statistical evaluation reports as described under section 6(e) of this rule.
- (8) ~~When requested by the commissioner, one (1) copy of the results of the laboratory analyses on computer diskette or by other electronic means must be submitted to the commissioner. The electronic format of the submission will be established by the commissioner.~~

(9) (8) When requested by the commissioner, the following information:

- (A) The results of all laboratory quality control sample analyses, including:
 - (i) blanks;
 - (ii) spikes;
 - (iii) duplicates; and
 - (iv) standards.
- (B) Raw data.
- (C) Laboratory bench sheets.
- (D) Laboratory work sheets.
- (E) Chromatograms.
- (F) Instrument printouts.
- (G) Instrument calibration records.

~~(tt)~~ (t) Detection monitoring must be conducted throughout the active life, closure, and post closure periods of the MSWLF. (*Solid Waste Management Board; 329 IAC 10-21-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1855; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2791; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3836*)

SECTION 74. 329 IAC 10-21-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-2 Sampling and analysis plan and program

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 2. (a) The owner, operator, or permittee shall carry out a ground water sampling and analysis program that is specified in an approved sampling and analysis plan, and that complies with the requirements of this rule. The sampling and analysis plan must address all items included in this section, where applicable, and it must satisfy the following requirements:

- (1) For all new MSWLFs permitted under this article, the sampling and analysis plan must be approved by the commissioner before the first sampling event occurs.
- (2) Existing MSWLFs that have not previously submitted an approved sampling and analysis plan that includes all applicable requirements of this section, must have a plan approved by the commissioner by one (1) of the following times, whichever occurs first:
 - (A) At the time of the next permit renewal application.
 - (B) At closure.
 - (C) At a time determined by the commissioner.
- (3) Existing MSWLFs that have, by the effective date of this article, submitted to the commissioner an approved sampling and analysis plan that does not include all applicable requirements of this rule, must submit a revised plan, if deemed necessary by the commissioner, by one (1) of the following times, whichever occurs first:
 - (A) At the time of the next permit renewal application.
 - (B) At closure.
 - (C) At a time determined by the commissioner.
- (4) Changes or additions to a previously approved sampling and analysis plan must be approved by the commissioner before the changes or additions are implemented.
- (5) The approved sampling and analysis plan must be retained at or near the MSWLF in the operating record or at an alternative location approved by the commissioner.
- (6) The sampling and analysis plan must include the following:
 - (A) A description of the following:
 - (i) The method that will be used to determine the sequence of sampling of ground water monitoring wells. The sequence determination must:
 - (AA) compare **ground water monitoring** wells that are not contaminated to those that are contaminated or to those that have the potential to be contaminated; and
 - (BB) follow the criteria described under subsection (b)(8).
 - (ii) The method of evacuation, including:
 - (AA) a description of the equipment and procedures to be used;
 - (BB) the method for calculating one (1) well volume at each well; and
 - (CC) the method for measuring the volume of water evacuated.
 - (iii) The equipment and procedures to be used in sample collection during detection, assessment, and corrective action ground water monitoring programs, including, but not limited to:
 - (AA) the sizes, number, and material of containers to be used for collection of samples; and
 - (BB) the manufacturer, make, and model number of field meters for pH, Eh, and specific conductance.
 - (iv) Copies of the owner's manual for each type of meter used in the sampling procedures.
 - (B) The qualifications and minimum training that the owner, operator, or permittee will require of the ground water sampler or sampling crew.

(b) The sampling and analysis program and procedures must comply with the following:

- (1) The sampling crew shall:
 - (A) ~~comply with requirements of state and federal agencies regarding worker safety;~~
 - ~~(B)~~ wear latex gloves, vinyl gloves, or gloves made out of alternative material that has been approved by the commissioner whenever the samplers' hands are in proximity of:
 - (i) sample water;
 - (ii) open sample containers;
 - (iii) sampling equipment; or
 - (iv) the open **monitoring** well; and
 - ~~(C)~~ (B) avoid contact between gloves and samples.
- (2) Each time ground water samples are collected from ground water monitoring wells at the monitoring boundary, **regardless of whether a map is produced as exempted in 329 IAC 10-21-1(p)(14)**, static water elevations must be:
 - (A) obtained from each **ground water** monitoring well and each piezometer;
 - (B) measured to the nearest one-hundredth (0.01) foot, and referenced to mean sea level; and
 - (C) obtained as close in time as practical from each **ground water monitoring** well or piezometer prior to purging and sampling each **ground water monitoring** well.

If such a purging and collection sequence is expected to affect the accuracy of the static water elevation measurements in any other **ground water monitoring** well or piezometer in the ground water monitoring system, then water elevation measurements must be obtained prior to purging and sampling any **ground water monitoring** well.
- (3) Samples that are to be analyzed for dissolved metals must be field filtered immediately after the sample is obtained from the **ground water** monitoring well using a forty-five hundredths (0.45) micron high capacity filter. Use of an alternative filter type or filter size must be approved by the commissioner.
- (4) Static water in the **ground water** monitoring well must be removed with equipment that does not:
 - (A) cause the water to cascade over the **ground water monitoring** well screen; or
 - (B) cause strong gradients or excess volatilization of organic compounds in the ground water.
- (5) The method of evacuation must be suited to the recharge of the ground water monitoring well, the well depth, and the well diameter, and must comply with one (1) of the following:
 - (A) Evacuation may be accomplished with a pump. If a pump is used, the following requirements must be satisfied:
 - (i) The intake of the pump must be placed within, and ground water must be withdrawn from, the screened interval of the **ground water monitoring** well.
 - (ii) Purging with a pump must continue until a minimum of three (3) well volumes has been evaluated or the field constituents of pH, specific conductance, and temperature are stabilized within ten percent (10%) of a field determined mean reading for three (3) consecutive field readings to be completed as follows:
 - (AA) A minimum of six (6) samples must be taken for the required parameters.
 - (BB) Three (3) consecutive samples must be used to arrive at the field determined mean reading, and each of the next three (3) samples must be within ten percent (10%) of the field determined mean.
 - (CC) In the event that one (1) or more of the last three (3) samples are not within ten percent (10%) of the mean, the first sample will be deleted and a new field mean will be calculated from the next three (3) consecutive samples.
 - (DD) Additional samples are taken and the process described under subitem (CC) is continued until three (3) consecutive samples agree within ten percent (10%) of the field mean determined by the three (3) previous consecutive samples.
 - (EE) Purging a **monitoring** well by more than five (5) well volumes is prohibited.
 - (iii) When removing water from the **ground water monitoring** well for obtaining a sample, the pump must not be raised or lowered unless the potentiometric surface is as low as or lower than the top of the well screen.
 - (iv) A **ground water monitoring** well purged by a pump must be sampled by the same pump unless otherwise approved by the commissioner.
 - (v) If the permittee chooses to use a rotary pump, it must be used in accordance with the following:
 - (AA) The flow must be maintained at a slow and steady rate.

- (BB) If the flow of water is intermixed with air during the use of the rotary pump, the pump must be lowered deeper into the water column or the sample collection must be accomplished with a bottom discharging bailer.
- (CC) The interior of the pump must be coated with Teflon® or an inert material equivalent to Teflon® or be composed of stainless steel.
- (vi) If the permittee chooses to use a positive gas displacement pump, it must be used in accordance with the following:
 - (AA) The flow must not be at a rate that forcefully ejects water or gas at the end of the expulsion cycle.
 - (BB) The generator must be placed downwind at least ten (10) feet from the **ground water monitoring** well being ~~monitored~~: **sampled**.
- (vii) If the permittee chooses to use a peristaltic pump, it must be used in accordance with the following:
 - (AA) The peristaltic pump must only be used in a **ground water monitoring** well with a depth of thirty-three (33) feet or less.
 - (BB) Historical data and tubing manufacturer data sheets must be utilized to select the proper tubing for each site.
 - (CC) Water in the tubes must be evacuated between **ground water monitoring** wells.
 - (DD) The tubes must be decontaminated between **ground water monitoring** wells.
- (B) Evacuation may be accomplished with a bailer. If a bailer is used, the following requirements must be satisfied:
 - (i) The **ground water monitoring** well must be purged a minimum of three (3) well volumes if the ground water recharge rate is greater than the ground water withdrawal rate.
 - (ii) The **ground water monitoring** well may be purged dry if the ground water recharge rate is less than the ground water withdrawal rate.
 - (iii) Purging a **ground water monitoring** well more than five (5) well volumes is prohibited.
 - (iv) The bailer must be made of Teflon®, PVC, stainless steel, or other material approved by the commissioner.
 - (v) To assure that volatile organics are not stripped from the water, the bailer must be lowered in a slow and steady manner until the top of the ground water is contacted.
 - (vi) The bailer must be lowered into the water column until the bailer is full or the base of the **ground water monitoring** well is contacted by the bottom of the bailer.
 - (vii) Once full of water, the bailer must be lowered no further into the water column.
 - (viii) The bailer cord must not touch or contact the water column.
 - (ix) To assure that volatile organics are not stripped from the water, the bailer must be withdrawn at a slow steady rate up the **ground water monitoring** well casing.
 - (x) When the bailer reaches the top of the **ground water monitoring** well riser, the bailer must be removed carefully to prevent aeration or agitation.
 - (xi) The bailer cord must be pulled away from the water when pouring from a top discharging bailer.
- (C) The MSWLF's sampling and analysis plan must designate methods for disposal of purged water and decontamination solutions.
- (D) The commissioner shall consider a **ground water monitoring** well to be dry under the following circumstances:
 - (i) The **ground water monitoring** well is not mechanically damaged, yet it is unable to deliver water when opened for sampling.
 - (ii) The **ground water monitoring** well does not have a recovery rate adequate to supply ground water for sampling within a twenty-four (24) hour period after the monitoring well is purged.
- (E) A **ground water monitoring** well that is dry on a consistent basis may be deemed by the commissioner to be an improperly functioning **ground water monitoring** well. The owner, operator, or permittee may be required to replace or relocate any improperly functioning **ground water monitoring** well.
- (6) Upon request, the commissioner may approve use of equipment or methods not specified in subdivision (5). The alternative equipment must provide equivalent evacuation efficiency and the request must include:
 - (A) an exact description of the purging or sampling apparatus;
 - (B) operational specifics of the apparatus; and

(C) an explanation of why the proposed sampling equipment is equivalent or superior to the equipment specified under subdivision (5) for:

- (i) accuracy of readings;
- (ii) minimization of cross contamination;
- (iii) suitability of the equipment to the site; and
- (iv) ease of decontamination, when applicable.

(7) Ground water monitoring sample collection for detection monitoring, verification resampling, assessment, and corrective action ground water monitoring programs must satisfy the following requirements:

(A) Each sample must be numbered and labeled as a separate sample.

(B) One (1) or more independent samples must be collected from every ground water monitoring well on-site or as otherwise specified by the commissioner.

(C) At least one (1) field duplicate sample must be collected as follows:

(i) A field duplicate sample is defined as an additional sample collected from a ground water monitoring well, where:

(AA) the additional sample is analyzed independently of the first sample obtained from that **ground water monitoring** well; and

(BB) the ground water quality results for the additional sample are not used in the statistical evaluation, unless approved by the commissioner.

(ii) The field duplicate sample must be treated in the same manner as the independent sample.

(iii) A field duplicate sample must be collected from one (1) **ground water monitoring** well for every ten (10) monitoring wells, or part thereof, sampled.

(iv) The field duplicate sample must not be identified as such to the laboratory performing the sample analysis.

(D) The first sample collected from a given **ground water monitoring** well must be listed on the field record as the independent sample. The additional sample from the given **monitoring** well must be listed on the field record as the field duplicate sample.

(E) The independent sample and the field duplicate sample must be collected consecutively. The equipment for obtaining the samples does not require decontamination between sample collection; however, the independent sample and the field duplicate sample must be analyzed independently of each other.

(F) At least one (1) trip blank sample must be taken and must meet the following requirements:

(i) Be containerized prior to entering the MSWLF.

(ii) Consist of water that is:

(AA) distilled;

(BB) deionized; or

(CC) laboratory grade water.

(iii) Be analyzed for all constituents required for the sampling event unless a justification for limiting the trip blank to specific constituents is submitted to and approved by the commissioner.

(iv) Accompany the independent samples at all times.

(v) The trip blank must be identified as such to the laboratory performing the sample analysis.

(G) At least one (1) equipment blank sample must be collected from each piece of nondedicated equipment used to collect samples at the site, in accordance with the following:

(i) The water used for the equipment blank sample collection must be either distilled water or deionized water.

(ii) The equipment to be sampled must include:

(AA) all nondedicated pumps and bailers;

(BB) intermediate containers;

(CC) probes used for measuring static water levels, if the probe is inserted into the **ground water monitoring** well after the well is purged; and

(DD) reusable sections of the field filtration equipment.

(iii) The equipment blank must be analyzed for all constituents required by the sampling event unless a justification for limiting the equipment blank to specific constituents is submitted to and approved by the commissioner.

(iv) The equipment blank must be obtained after the last **ground water** monitoring well has been sampled.

- (v) **The equipment blank must be identified as such to the laboratory performing the sample analysis.**
- (H) At the end of each sampling day, the sampler may collect at least one (1) field blank sample. If a field blank sample is collected, the following criteria must be met:
 - (i) The water used for the sample must be distilled water or deionized water brought onto the site and poured into the designated sample bottles within fifty (50) feet from any ground water monitoring well sampled the day the field blank is collected.
 - (ii) Field blank samples must be analyzed for all constituents required for the sampling event unless a justification for limiting the field blank to specific constituents is submitted to and approved by the commissioner.
 - (iii) **The field blank must be identified as such to the laboratory performing the sample analysis.**
- (8) Ground water samples must be collected in a sequence that satisfies the following:
 - (A) **Ground water monitoring** wells must be sampled in a sequence that minimizes the potential for cross contamination of samples. Historical ground water quality data must be used in estimating a well's potential for contamination. Samples must be collected in order of increasing likelihood of contamination in the **monitoring** well supplying the sample as follows:
 - (i) All ~~upgradient~~ **background** ground water monitoring wells must be sampled before downgradient wells.
 - (ii) If downgradient **ground water monitoring** wells have not been verified to be contaminated, samples must be collected first from those downgradient **monitoring** wells that are furthest from disposed solid waste, followed by **monitoring** wells that are increasingly close to disposed solid waste.
 - (iii) Downgradient **ground water monitoring** wells that have been verified as contaminated must be sampled in sequence, starting with those downgradient **monitoring** wells that have the lowest level of contaminants, followed by **monitoring** wells that have increasingly higher levels of contaminants.
 - (B) Samples must be collected in a sequence that minimizes volatilization of compounds. Samples must be collected in order of decreasing volatility as follows:
 - (i) For the constituents listed in section 15(a) of this rule (Table 1A) and section 15(b) of this rule (Table 1B):
 - (AA) volatile organic compounds;
 - (BB) field pH;
 - (CC) field specific conductance;
 - (DD) dissolved metals; and
 - (EE) all other constituents.
 - (ii) For the constituents listed in section 16 of this rule (Table 2):
 - (AA) volatile organic compounds;
 - (BB) field pH;
 - (CC) field specific conductance;
 - (DD) semivolatile organics;
 - (EE) dissolved metals;
 - (FF) total metals; and
 - (GG) all other constituents.
 - (C) A sample collection sequence for the constituents listed in section 15(a) of this rule (Table 1A), section 15(b) of this rule (Table 1B), and section 16 of this rule (Table 2) must be developed for use in the event that a ground water monitoring well cannot supply sufficient water volume to collect a full sample. To establish the sample collection sequence, the owner, operator, or permittee shall consider:
 - (i) **ground water monitoring** well logs; and
 - (ii) previous sample data.
- (9) All nondedicated equipment must be decontaminated in accordance with the following requirements:
 - (A) Decontamination procedures must be implemented after sample collection at each **ground water monitoring** well and before reuse of the equipment. Time of decontamination must be indicated on the field report sheet. The commissioner may approve alternate decontamination procedures that provide equally reliable prevention of cross contamination.
 - (B) If a rotary pump is used, then the following decontamination procedures must be implemented:
 - (i) The interior, exterior, and tubing must be decontaminated.

- (ii) The exterior of the rotary pump must be washed with a nonphosphate detergent and potable water bath. The exterior of the rotary pump must be rinsed in potable water and double rinsed in deionized or distilled water.
- (iii) The pump must have a volume of a nonphosphate detergent water mixture pumped through the system equal to one-third (a) of the previous **ground water monitoring** well's purge volume or two (2) gallons, whichever is less, to remove all pumped water from the internal parts. This solution must be pumped through the pump head and then continued through the tubing until ejected from the system.
- (iv) A gross rinse of potable water must follow the detergent mixture specified in item (iii). The rinse water volume must match the volume specified in item (iii).
- (v) If samples are acquired from the pump, a minimum of three (3) gallons of distilled or deionized water rinse must be pumped through the system prior to sampling the next **ground water monitoring** well.
- (vi) The commissioner may approve an alternative decontamination procedure provided the alternative procedure yields equally reliable prevention of cross contamination.
- (C) If a peristaltic pump is used, then the following decontamination procedures must be implemented:
 - (i) The tubing must be decontaminated.
 - (ii) After each water sample passes through the pump, a volume of distilled or deionized water and nonphosphate detergent solution equal to the sample volume must be immediately passed through the pump.
 - (iii) The detergent solution must be followed by a potable water rinse. The volume of the rinse must be three (3) times the detergent solution volume.
- (D) If a bailer is used, then the following decontamination procedures must be implemented:
 - (i) Proper equipment must be utilized to decontaminate the internal, external, and valve components of the bailer.
 - (ii) Nondedicated bailers must be decontaminated on-site prior to obtaining samples from the next **ground water monitoring** well. Decontamination must consist of, in the following order:
 - (AA) Washing the interior and exterior surfaces of the bailer with a nonphosphate detergent solution.
 - (BB) Rinsing with potable water.
 - (CC) Final double rinsing with distilled or deionized water.
 - (iii) Dedicated bailers that are either stored at a site away from the sampling point, or stored in the **ground water monitoring** well riser and above the maximum ground water level must be double rinsed with distilled or deionized water prior to use. Bailers must not be stored below the ground water level in the **monitoring** well.
 - (iv) Teflon® coated wire and any water level probe must be:
 - (AA) submerged in a nonphosphate detergent bath;
 - (BB) abraded by a clean cloth as the wire is removed from the wash bath;
 - (CC) deposited into a gross rinse bath of potable water; and
 - (DD) lifted as a coil and placed in a final distilled or deionized water rinse.
 - (v) A rope attached to the bailer or lead wire must not be reused.
- (E) Meters that measure for specific conductance, temperature, Eh, and pH must be washed with a nonphosphate detergent solution and rinsed with a volume of deionized water equal to a minimum of four (4) times the volume used by the meter for effective readings, unless nonphosphate detergent will inhibit the meter's ability to function properly.
- (10) **Ground water** monitoring well samples must be collected in containers that are specified in either the MSWLF's sampling and analysis plan or the quality assurance project plan described in subdivision (13). The commissioner may establish guidance regarding the following:
 - (A) Recommended preservatives.
 - (B) Bottle material composition.
 - (C) Minimum sample volumes.
 - (D) Refrigeration after sample collection.
 - (E) The prevention of exposure to direct radiation.
- (11) Field meters for pH, Eh, and specific conductance must be as follows:
 - (A) have accuracy of readings that do not vary more from a standard value than the following:
 - (i) Three percent (3%) of the reading for a suitable standard for specific conductance.

- (ii) Twenty-five (25) millivolts of the indicator solution for Eh.
 - (iii) One-tenth (0.1) standard unit of the calibration standard value for pH.
- (B) be calibrated at the beginning and end of each day of a sampling event, or more frequently if recommended by a manufacturer's specifications, in accordance with the following:
- (i) The calibration solutions of high, low, and midrange values must be retained on-site during the sampling event for potential use at every sampling point.
 - (ii) Calibrations must be conducted as specified by the manufacturer of the equipment.
- (12) The sampler shall submit to the commissioner a field report for every sampling event. The report must include the following information pertaining to each ground water monitoring well **and piezometer, when applicable**:
- (A) The time and date each **ground water monitoring** well was purged and sampled.
 - (B) The location of each **ground water monitoring** well that was sampled, including indicating the **monitoring** well as ~~upgradient~~ **background** or downgradient of the solid waste boundary.
 - (C) The condition of **ground water monitoring** well heads **and piezometers** and monitoring well security devices.
 - (D) The weather conditions during sample collection.
 - (E) The condition of purged water with regard to odor and turbidity, and the condition of the collected sample.
 - (F) The in situ temperature, in degrees Celsius, of the ground water as measured in line or immediately after removal of water from the **ground water monitoring** well.
 - (G) The static water elevations referenced to mean sea level and measured to the nearest one-hundredth (0.01) foot.
 - (H) The type of equipment used for purging and for collection of samples and, where applicable, the cord's chemical composition.
 - (I) A copy of the chain of custody for the sample.
 - (J) The location and elevation of the referenced measuring mark on the **ground water monitoring well and piezometer** casing used to measure the static water elevations.
 - (K) The time equipment was decontaminated at each **ground water monitoring** well location.
 - (L) The reaction of the ground water to the preserving agent when the sample is containerized.
 - (M) Additional information as required by the commissioner.
- (13) The owner, operator, or permittee of an MSWLF shall develop a quality assurance project plan and submit the following items to the commissioner for approval:
- (A) Documentation to verify that all laboratories performing ground water sample analysis intend to comply with the minimum standards set forth in the facility's quality assurance project plan.
 - (B) One (1) scientifically valid and accurate testing method approved by the commissioner for each constituent required for analysis under this rule.
- (14) Each owner, operator, or permittee of an MSWLF shall develop and utilize a chain of custody protocol to account for the possession and security of any sample from the time the sample is taken until the analytical results are received by the commissioner. The chain of custody protocol must conform with the following:
- (A) The field chain of custody form must account for the sample from the time the sample is removed from the **ground water monitoring** well until the time the sample is delivered to the laboratory and the sample custodian of the analytical laboratory signs the field chain of custody form.
 - (B) The laboratory chain of custody form must account for the location and security of the sample from the sample's arrival at the analytical laboratory until the analysis of the sample is found to be acceptable under the quality assurance plan.
 - (C) Field and laboratory chain of custody forms must identify each sample with its unique identifying number and include the following information:
 - (i) The number and types of containers holding the sample.
 - (ii) The names of all persons having contact with the sample, including those persons collecting or transporting the sample.
 - (iii) The time and dates of any transfers in possession of a sample.
 - (iv) The condition of the sample at the time of its arrival at the laboratory, including the condition of the sample's seal and the temperature inside each cooler holding a sample.

(D) In addition to the information required under clause (C), the field chain of custody form must include a task sheet that delineates the analysis to be performed on the sample or samples.

(E) The laboratory must maintain the laboratory chain of custody form and, upon request, release the laboratory chain of custody form to the commissioner. The field chain of custody form must be submitted to the commissioner in accordance with section 1(t) of this rule.

(c) Upon request, the commissioner may approve the use of methods, procedures, or equipment not specified in subsection (b). The alternative methods, procedures, or equipment must provide results or measurements that are equivalent in accuracy and reliability and the request must include the following:

- (1) an exact description of the alternative methods, procedures, or equipment; and
- (2) an explanation of why the proposed methods, procedures, or equipment are equivalent or superior to those specified under subsection (b).

(Solid Waste Management Board; 329 IAC 10-21-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1858; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2794; errata filed Jun 10, 1998, 9:23 a.m.: 21 IR 3939; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3839)

SECTION 75. 329 IAC 10-21-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-4 Ground water monitoring well and piezometer construction and design

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 4. (a) Ground water monitoring wells **and piezometers** installed after the effective date of this article must comply with the requirements of this section.

(b) The following drilling techniques must be used to ensure proper ground water monitoring well construction:

(1) The method of drilling a borehole for a **ground water** monitoring well or for exploration must be selected to ensure the following:

- (A) Subsurface materials are not adversely affected.
- (B) Ground water or aquifers are not contaminated or cross-contaminated.
- (C) Quality continuous unconsolidated and consolidated material samples are collected.
- (D) Equipment sensitivity allows adequate determination of an appropriate screen location.
- (E) The diameter of the borehole is at least four (4) inches larger than the diameter of the **ground water monitoring** well casing and screen, to allow tremie placement of the filter pack and annular sealants.
- (F) Drill fluids other than water ~~fluid additives, or lubricants~~ are to be avoided. However, if ~~they~~ **fluid additives or lubricants** are unavoidable, those used must be demonstrated to be inert and an impact statement must be made regarding the potential impact of any liquids introduced into the borehole concerning the physical and chemical characteristics of the subsurface and ground water.

(2) All equipment that will encounter formation materials must be decontaminated prior to drilling each new borehole.

(c) Casing and screen materials must comply with the following:

(1) Casing and screen materials must be chosen to:

- (A) be resistant to corrosion and degradation in any natural or contaminated environment;
- (B) be resistant to physical damage as a result of installation, usage, and time; and
- (C) have minimal effect on ground water chemistry with respect to the analytes of concern.

(2) The casing sections must be physically joined and made watertight by:

- (A) heat welding;
- (B) threading; or
- (C) force fitting.

(3) The use of solvents, glues, or other adhesives to join casing sections is prohibited.

- (4) **For ground water monitoring wells**, the casing must be two (2) inches in diameter or greater; **for piezometers not to be used for sample collection, the diameter must be one (1) inch or greater.**
- (5) Except for open borehole bedrock **ground water monitoring** wells, screens are required for all ground water monitoring wells **and piezometers** and must include the following:
- (A) The screens must be continuous slot wire or machine slotted.
 - (B) Slot size must retain ninety percent (90%) to one hundred percent (100%) of the filter pack material.
 - (C) Screen lengths must be not less than two (2) feet and not greater than ten (10) feet unless approved by the commissioner.
- (6) **Ground water monitoring well and piezometer** casing and screens must be cleaned prior to introduction into the borehole to prevent manufacturers' residues and coatings from contaminating the borehole or aquifer.
- (7) Screen and casing must be properly centered in the borehole prior to filling the annulus.
- (d) Procedures for collecting, analyzing, and storing core samples must comply with the following:
- (1) Continuous downhole samples of the unconsolidated and consolidated materials must be collected in all ground water monitoring well **and piezometer** boreholes **unless the ground water monitoring wells or piezometers are replacement monitoring wells or piezometers under 329 IAC 10-21-1(g)(2).** For monitoring well clusters **or piezometer clusters**, continuous samples must be collected from the surface to the base of the deepest **monitoring well or piezometer**; other **monitoring wells or piezometers** within the cluster must be sampled at all significant stratigraphic changes and at the screened interval. Samples must not be combined into composite samples for classification or testing.
 - (2) All procedures regarding testing and sampling must be described to the commissioner in writing.
 - (3) The owner, operator, or permittee shall:
 - (A) retain all borehole samples in labeled containers or labeled core boxes that are securely stored and accessible for a period of:
 - (i) seven (7) years after the samples are collected; or
 - (ii) seven (7) years after permit issuance;
 whichever occurs later;
 - (B) notify the commissioner, in writing, of the location of the core sample storage; and
 - (C) ensure that core samples are available for inspection, by the commissioner or by a representative of the department, at all reasonable times or during normal operating hours.
 - (4) Each significant stratum encountered in the borehole must have the following analysis performed and testing results must be identified with respect to sample elevations and borehole:
 - (A) Complete grain size using the following techniques:
 - (i) Sieve.
 - (ii) Hydrometer.
 - (B) Cation exchange capacity.
 - (C) Hydraulic conductivity if the information for that strata is not available to the satisfaction of the commissioner.
 - (D) Atterberg limits.
- (e) The ground water monitoring well **or piezometer** annulus must be filled as follows when drilling is complete:
- (1) The annular space from six (6) inches below the well screen to two (2) feet above the well screen must be filled with a filter pack consisting of inert sand or gravel and shall comply with the following:
 - (A) A uniform grain size must be chosen to reflect three (3) to five (5) times the average fifty percent (50%) retained size of the formation material unless this filter pack grain size would impede adequate flow of ground water into the **ground water monitoring well or piezometer**. Should this happen, a filter pack grain size shall be used that allows ground water flow into the **monitoring well or piezometer** and prevents as much silt infiltration as possible.
 - (B) Natural material may be an acceptable constituent of the filter pack if slump is unavoidable.
 - (C) The filter pack in a bedrock **monitoring well or piezometer** is optional. However, if used, the filter pack must be of a nonreactive coarse sand or gravel.

- (D) The upper one (1) to two (2) feet of the filter pack must be of fine, inert sand to prevent infiltration of seal materials.
- (E) The filter pack must be emplaced without bridging, preferably by tremie pipe, or other methods as approved by the commissioner **to ensure the integrity of the filter pack.**
- (2) A bentonite seal of at least three (3) feet must be emplaced by tremie pipe in the annular space directly above the filter pack.
- (3) The annular space from the bentonite seal to one (1) foot below the frost line must be tremied with a grout of bentonite, cement/bentonite, or other shrinkage-compensated, low permeability fill and shall include the following:
- (A) All bentonite and cements must be mixed to the manufacturer's specifications.
 - (B) Full hydration, curing, or setting of the bentonite seal must occur prior to further backfilling as required by this subdivision.
- (4) A surface seal of neat cement or concrete must be installed in the remaining borehole annular space above the intermediate fill, including the following:
- (A) The apron of the surface seal must be designed to prevent ponding and infiltration by extending at least two and five-tenths (2.5) feet from the **ground water monitoring** well casing.
 - (B) The apron must slope at least fifteen (15) degrees outward.
 - (C) A locking protective metal casing must be installed around the **ground water monitoring** well casing and be anchored below the frost line in the surface seal.
 - (D) A vent hole or vented cap must be placed at the top of the **ground water monitoring** well or **piezometer** casing to allow accurate piezometric variation and to prevent gas build-up.
 - (E) The annular space between the **ground water monitoring** well casing and the protective metal casing must be neat cement filled to a level at least one (1) inch higher than that of the surrounding apron.
 - (F) A drainage hole must be drilled in the protective metal casing immediately above the cement fill specified in clause (E).
 - (G) The remaining annular space between the **ground water monitoring** well casing and the protective metal casing must be filled with a fine gravel.
 - (H) A weather resistant lock must be dedicated to the ~~unit~~ **ground water monitoring well** and must be serviced twice a year and when the **ground water monitoring** well is sampled.
 - (I) A permanent unique identification must be affixed to each ground water monitoring well and the identification must be visible.
 - (J) Three (3) foot bumper guards or other suitable protection may be required by the commissioner to prevent vehicular traffic from damaging the protective metal casing.
- (f) The permittee shall provide ten (10) days' advance notification of the date and time of the installation of the monitoring wells **or piezometers.**
- (g) Development of ground water monitoring wells must occur as soon as possible after the seal and grout have set and must conform with the following:
- (1) All **ground water** monitoring wells must be developed in such a way as to:
 - (A) allow free entry of formation water;
 - (B) minimize turbidity of the sample; and
 - (C) minimize clogging of the **monitoring** wells.
 - (2) Development methods chosen must be appropriate for the stratigraphic conditions.
 - (3) An in situ hydraulic conductivity test must be performed after the **ground water monitoring** well has been properly developed.
- (h) Diagrammatical borehole drilling logs for all ground water monitoring wells **and piezometers** must be of similar scale and include the following information:
- (1) The monitoring well **or piezometer** and borehole identification.
 - (2) The date of drilling.
 - (3) The method of drilling.

- (4) The borehole diameter.
 - (5) The method of obtaining consolidated material and unconsolidated material.
 - (6) The type of any drill fluids, fluid additives, or lubricants other than water that have been used.
 - (7) Penetration measurements, such as hammer blow counts, penetrometer measurements, or other acceptable penetration measurements.
 - (8) The sample recovery measured to the nearest one-tenth (0.1) foot.
 - (9) Consolidated material and unconsolidated material field descriptions, including the following information:
 - (A) Lithology and sedimentology.
 - (B) Mineralogy.
 - (C) Degree of cementation.
 - (D) Degree of moisture.
 - (E) Color as referenced from soil color charts such as the Munsell soil charts.
 - (F) Grain size and textural classification of unconsolidated samples as referenced from the United States Department of Agriculture (**USDA**) textural classification charts. Grain-size divisions shall be based on a modified form of the Wentworth grain-size scale defined under 329 IAC 10-2-206.3. A determination shall be made of the percentage and grades of coarse fragments greater than two (2) millimeters in size based on 329 IAC 10-2-206.3 in addition to the USDA textural classification. Consolidated samples must be described using accepted geological classification systems and nomenclature. A clear description of the classification system used must be included with the logs.
 - (G) Any other physical characteristics of the consolidated material and unconsolidated material such as scent, staining, fracturing, and solution features.
 - (H) The percent recovery and rock quality designation.
 - (I) Other primary or secondary features.
 - (J) Drilling observations and appropriate details required for unconsolidated drilling logs.
 - (K) A clear photograph of all consolidated cores, labelled with:
 - (i) the date the photograph was taken;
 - (ii) the sample interval;
 - (iii) the reference scale;
 - (iv) the reference color scale; and
 - (v) the identification of the borehole.
 - (L) Interval of continuous samples and unconsolidated material test data.
 - (10) Distance to and depth of any water bearing zones, measured to the nearest one-hundredth (0.01) foot.
 - (11) Static water elevations measured to the nearest one-hundredth (0.01) foot and indicating the dates and times the measurements were taken.
 - (12) The elevation of permanent **monitoring wells or piezometers** at the ground surface to the nearest one-tenth (0.1) foot, with the referenced measuring mark measured to the nearest one-hundredth (0.01) foot relative to the National Geodetic Vertical Datum.
 - (13) The horizontal location of permanent monitoring wells **or piezometers** measured to the nearest thirty (30) cm using Universal Transverse Mercator (UTM) coordinates.
 - (14) Total borehole depth and elevation measured to the nearest one-hundredth (0.01) foot.
 - (15) Elevation range of screened interval measured to the nearest one-hundredth (0.01) foot.
- (i) ~~Diagrammatical construction and design logs of~~ **The construction details and diagrams of** all pertinent ground water monitoring wells must **be recorded on logs and** include the following information:
- (1) The monitoring well identification and UTM coordinates as described under subsection (h)(13).
 - (2) The composition of **monitoring** well and protective casing materials.
 - (3) The type of joints and couplings between **monitoring** well casing segments.
 - (4) The elevations of the ground ~~water~~ surface to the nearest one-tenth (0.1) foot and of the referenced measuring mark at the top of the **monitoring** well casing measured to the nearest one-hundredth (0.01) foot relative to the National Geodetic Vertical Datum.
 - (5) The diameter of **monitoring** well casing and borehole.

- (6) The elevation of the bottom of the borehole and the depth of the borehole measured to the nearest one-hundredth (0.01) foot.
- (7) The screen slot size.
- (8) The elevation range of the screened interval measured to the nearest one-hundredth (0.01) foot.
- (9) The screen length measured to the nearest one-hundredth (0.01) foot.
- (10) Methods of installation of the annular fill.
- (11) The elevation range and the depth of the filter pack measured to the nearest one-hundredth (0.01) foot.
- (12) The length of the filter pack.
- (13) The grain size and composition of all filter pack materials and the fifty percent (50%) retained size of the formation material used to determine filter pack materials.
- (14) The elevation and depth range of the bentonite seal above the filter pack measured to the nearest one-hundredth (0.01) foot.
- (15) The thickness of the bentonite seal above the filter pack.
- (16) The composition of annular fill.
- (17) The elevation range, depth range, and thickness of annular fill measured to the nearest one-hundredth (0.01) foot.
- (18) The composition and design of the surface seal.
- (19) The design and composition of materials used for the protection of the **monitoring** well casing.

(j) The construction details and diagram of each piezometer must be recorded on the logs and include the following:

- (1) Piezometer identification number and UTM coordinates.**
- (2) Elevation of the top of the piezometer casing.**
- (3) Height of piezometer casing above the ground.**
- (4) Elevation of the ground surface.**
- (5) Elevation and depth to the bottom of the borehole.**
- (6) Diameter of piezometer casing and borehole.**
- (7) Elevation and depth to the bottom and top of the piezometer screen.**
- (8) Length of piezometer casing.**
- (9) Composition of piezometer casing materials and piezometer screen material.**
- (10) Length of piezometer screen.**
- (11) Screen slot size.**
- (12) Type of joints or couplings, or both, between casing segments.**
- (13) Elevation and depth to the top and bottom of the gravel filter pack surrounding the piezometer screen.**
- (14) Length of the gravel filter pack.**
- (15) Elevation and depth of the bottom of the piezometer casing.**
- (16) Elevation and depth of the top and bottom of the seal above the gravel filter pack.**
- (17) The grain size and composition of all filter pack materials and the fifty percent (50%) retained size of the formation material used to determine filter pack materials.**
- (18) Thickness of the seal above the gravel filter pack.**
- (19) Elevation and depth of the annular seal above the gravel filter pack seal.**
- (20) Thickness of the annular seal.**
- (21) Material used for the annular seal.**
- (22) Method of installation of the annular seal.**
- (23) The composition and design of the surface seal.**

(Solid Waste Management Board; 329 IAC 10-21-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1864; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2046; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2799; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3845)

SECTION 76. 329 IAC 10-21-6 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-6 Statistical evaluation requirements and procedures

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 6. (a) The owner, operator, or permittee shall determine if there is a statistically significant increase for each constituent analyzed, except for constituents listed in section 15(b) of this rule (Table 1B). This statistical evaluation is required each time ground water is collected and analyzed at the monitoring boundary for all MSWLFs.

(b) To determine a statistically significant increase compared to the background ground water quality, each constituent from each ground water monitoring well sample must be compared to the background ground water quality of that constituent, according to the statistical procedures and performance standards specified in this section.

(c) The owner, operator, or permittee shall submit to the commissioner for approval a written statistical evaluation plan for each ground water monitoring program required under this rule. Submittal of the plan must comply with the following:

- (1) For all new MSWLFs and lateral expansions to be permitted under this article, the plan must be submitted before the first sampling event occurs following permit issuance or as otherwise specified by the commissioner.
- (2) For existing MSWLFs, the plan must be submitted with the next renewal application, at the time of closure, or as specified by the commissioner, whichever occurs first, unless a statistical evaluation plan that includes all applicable requirements under this section has been previously submitted.
- (3) The plan must explain which of the various statistical methods, described in subsection (f), may be needed to address a continuously expanding ground water data base. All statistical methods must meet the performance standards outlined in subsection (g).
- (4) The plan must identify the statistical procedures to be used whenever verification resampling, as specified under section 8 of this rule, is implemented.
- (5) The plan must identify any computer data management or statistical evaluation program used by the owner, operator, or permittee and, upon request by the commissioner, include appropriate documentation of the computer program.

(d) Changes to the statistical evaluation plan must not be implemented without approval from the commissioner.

(e) The owner, operator, or permittee shall submit a statistical evaluation report of the ground water sample analysis to the commissioner. The report must be submitted within sixty (60) days after obtaining ground water samples from the ground water monitoring wells, unless a verification resampling program described under section 8 of this rule, is implemented. The statistical evaluation report must include the following:

- (1) All input data, output data, and equations used for all calculations and statistical tests utilized.
- (2) A detailed discussion of the conclusions from the statistical evaluation. This discussion must include the identification of all constituents found to have a statistically significant increase.
- (3) A graphical representation of the MSWLF's ground water data when requested by the commissioner. The commissioner shall provide guidance in preparing graphics.

(f) Any of the following statistical procedures may be chosen for the statistical evaluation, provided the chosen statistical procedure is capable of meeting the performance standards in subsection (g):

- (1) A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify a statistically significant increase. The method must include estimation and testing of the contrasts between each downgradient ground water monitoring well's mean and the background mean levels for each constituent.
- (2) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each downgradient ground water monitoring well's median and the background ground water quality median levels for each constituent.

- (3) A tolerance or prediction interval in which an interval for each constituent is established from the distribution of the background ground water quality data, and the level of each constituent in each downgradient ground water monitoring well for the most recent sampling event is compared to the upper tolerance limit or upper prediction limit.
 - (4) A control chart, which establishes control limits for each constituent.
 - (5) A temporal or spatial trend analysis.
 - (6) Another valid statistical test method that meets the performance standards of subsection (g).
- (g) The statistical procedures and methods used must comply with the following performance standards:
- (1) The statistical procedure used to evaluate ground water monitoring data must be appropriate for the data distribution of each constituent. If the data distribution of a constituent is shown to be inappropriate for a normal theory test, then either the data must be transformed or a distribution-free statistical test must be used. If data distributions for the constituents differ, more than one (1) statistical method may be needed.
 - (2) If ground water data from an individual **ground water** monitoring well is compared either to background ground water quality, which may include pooled ~~upgradient ground water~~ **background** monitoring well data from more than one (1) well, or to a ground water protection standard, then the test must be done at a Type I error level that is no less than one-hundredth (0.01) for each testing period. If a multiple comparisons procedure is used, the Type I experiment wise error rate for each testing period must be no less than five-hundredths (0.05); however, the Type I error rate of no less than one-hundredth (0.01) for individual **monitoring** well comparisons must be maintained. This performance standard does not apply to:
 - (A) tolerance intervals;
 - (B) prediction intervals; and
 - (C) control charts.
 - (3) The validity of the statistical test used must be evaluated prior to applying the method to the ground water data. This evaluation must address:
 - (A) the error potential for false positives and false negatives; and
 - (B) any other evaluation deemed necessary by the commissioner.
 - (4) If a control chart is used to evaluate ground water monitoring data, the specific type of control chart and associated statistical parameter values must be protective of human health ~~and~~ **or** the environment. These values must be determined after considering:
 - (A) the number of background samples;
 - (B) the background data distribution; and
 - (C) the range of background concentrations for each constituent analyzed.
 - (5) If a tolerance interval or a prediction interval is used to evaluate ground water monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, must be protective of human health ~~and~~ **or** the environment. These statistical parameters must be determined after considering:
 - (A) the number of background samples;
 - (B) the background data distribution; and
 - (C) the range of background concentrations for each constituent analyzed.
 - (6) The statistical method must account for data below the limit of detection with one (1) or more statistical procedures. Any practical quantitation limit that is used in a statistical procedure must:
 - (A) be the lowest concentration limit that can be repeatedly and reliably achieved; and
 - (B) be within specified limits of precision and accuracy during routine laboratory operating conditions.
 - (7) If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability.

(Solid Waste Management Board; 329 IAC 10-21-6; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1866; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2802; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3848)

SECTION 77. 329 IAC 10-21-7 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-7 Detection ground water monitoring program

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 7. (a) A detection ground water monitoring program that satisfies the following requirements is required for all MSWLFs:

(1) Within the six (6) months following the scheduled date of compliance that is specified in section 1(a) of this rule, a minimum of four (4) independent background samples from each approved ground water monitoring well must be collected and analyzed for the constituents listed in section 15(a) of this rule (Table 1A). If a background data base, comprising data from every monitoring well approved by the commissioner and every constituent listed in section 15(a) of this rule (Table 1A), has been previously established, then additional independent samples are not required for the purpose of establishing background.

(2) Any **ground water monitoring** well installed after the scheduled date of compliance specified in section 1(a) of this rule and designated for detection monitoring must have minimum number of independent samples collected and analyzed for the constituents listed in section 15(a) of this rule (Table 1A). The minimum number of independent samples must satisfy the chosen statistical procedures and performance standards under section 6 of this rule.

(3) Within the six (6) months following the scheduled date of compliance that is specified in section 1(a) of this rule, a minimum of four (4) independent background samples from each approved ground water monitoring well must establish background for Arsenic (dissolved) as listed in section 15(a) of this rule (Table 1A). If a background data base, comprising data from every monitoring well approved by the commissioner and every constituent listed in section 15(a) of this rule (Table 1A), has been previously established, then additional independent samples are not required for the purpose of establishing background.

~~(3)~~ (4) Subsequent sampling events during the active life, closure, and post-closure periods of the MSWLF must include the collection and analysis of at least one (1) independent sample from each approved **ground water** monitoring well. These samples must be analyzed for all constituents in section 15 of this rule (Table 1A and Table 1B). The detection monitoring frequency must be at least semiannual during the active life, closure, and post-closure periods.

~~(4)~~ (5) The commissioner may specify an alternative frequency for detection monitoring that must comply with the following:

(A) The alternative frequency must be no less than annual.

(B) The alternative frequency must be based on consideration of the following factors:

(i) Sedimentology of the aquifer and unsaturated zone.

(ii) Hydraulic conductivity of the aquifer and unsaturated zone.

(iii) Ground water flow rates.

(iv) Minimum distance between the upgradient permitted solid waste boundary and the downgradient ground water monitoring well screen.

(v) Resource value of the aquifer.

(vi) The fate and mode of transport of any constituents detected in response to detection monitoring.

(vii) Constituent concentrations recorded at the date of alternative frequency selection.

~~(5)~~ (6) The owner, operator, or permittee must determine, based on the results of sample collection and analysis performed in accordance with this subsection, whether any statistically significant increase in concentration has occurred for any constituent listed in section 15(a) of this rule (Table 1A). In order to make this determination, the owner, operator, or permittee must compare the samples to:

(A) background ground water quality;

(B) a ground water protection standard that has been established from a previous assessment ground water monitoring program conducted under section 10 of this rule; or

(C) a ground water protection standard that was established under 329 IAC 2-16-10, which was repealed in 1996.

(b) If a ~~statistically significant increase~~ **preliminary exceedance** in a constituent concentration has been determined, through ground water detection monitoring performed in accordance with subsection (a), the owner, operator, or permittee must accomplish the following:

(1) Notify the commissioner within fourteen (14) days of the determination. The notification must include the following:

(A) Those constituents listed in section 15(a) of this rule (Table 1A) for which a ~~statistically significant increase~~ **preliminary exceedance** in concentration has been observed and the last recorded concentration for each of those constituents.

(B) The identification of each ground water monitoring well where a ~~statistically significant increase~~ **preliminary exceedance** was observed.

(C) Whether verification procedures and sampling as described under section 8 of this rule will be pursued.

(2) Establish, within ninety (90) days of determination of a statistically significant increase, an assessment ground water monitoring program that meets the requirements of section 10 of this rule unless the owner, operator, or permittee chooses:

(A) to institute a verification program, pursuant to section 8 of this rule; or

(B) to demonstrate, pursuant to section 9 of this rule.

(c) A corrective action program may be required during a detection monitoring program if a ~~verified statistically significant increase~~ **preliminary exceedance** is **verified and is** attributable to the MSWLF and is an increase over either of the following:

(1) A ground water protection standard that has been established from a previous assessment ground water monitoring program conducted under section 10 of this rule.

(2) A ground water protection standard that was established under 329 IAC 2-16-10, which was repealed in 1996, for any constituent listed in section 15(a) of this rule (Table 1A).

(d) If, pursuant to subsection (c), the commissioner determines that a corrective action program is necessary, the owner, operator, or permittee must notify all pertinent local government officials of this determination.

(e) If the field pH for any ground water sample obtained at the monitoring boundary is determined to be above ten (10) or below five (5) standard pH units, the owner, operator, or permittee shall:

(1) within fourteen (14) days of the determination, notify the commissioner, in writing, of the identity of the **ground water monitoring** well or wells whose samples indicated an anomalous pH level, and of the corresponding pH values of those samples; and

(2) within sixty (60) days of the determination, submit a written report explaining the anomalous pH values to the commissioner. After reviewing the report, the commissioner may determine that an assessment ground water monitoring program, described under section 10 of this rule, is necessary.

(f) During detection monitoring, if Arsenic (dissolved) is determined to exceed the MCL for Arsenic for any ground water sample obtained at the monitoring boundary, the owner, operator, or permittee shall:

(1) within fourteen (14) days of the determination, notify the commissioner, in writing, of the identity of the ground water monitoring well or wells whose samples indicated concentration greater than the MCL; and

(2) within sixty (60) days of the determination, submit a written report to the commissioner explaining the high Arsenic values. After reviewing the report, the commissioner may determine that an assessment ground water monitoring program or a corrective action program, described under section 10 or 13, respectively, of this rule, is necessary.

(Solid Waste Management Board; 329 IAC 10-21-7; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1868; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2046; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2803; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3849)

SECTION 78. 329 IAC 10-21-8 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-8 Verification of a statistically significant increase in constituent concentration

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 8. (a) The owner, operator, or permittee shall develop a verification resampling and analysis plan that will provide verification that a ~~statistically significant increase~~ **preliminary exceedance** has occurred in the concentration of one or more constituents during detection or assessment monitoring programs. This plan must:

- (1) use the statistical procedures and performance standards described in section 6 of this rule to determine:
 - (A) the number of resamples that must be collected for verification of a ~~statistically significant increase~~ **preliminary exceedance** in constituent concentration; and
 - (B) the number of resamples that must fail in order to verify the ~~statistically significant increase;~~ **preliminary exceedance;**
- (2) identify the MSWLF-wide false positive rate and the per-comparison false positive rate;
- (3) demonstrate that there is an acceptable balance between the false positive rate and the false negative rate;
- (4) be approved by the commissioner prior to implementation; and
- (5) after approval by the commissioner, be incorporated into the statistical evaluation plan.

(b) Until the owner, operator, or permittee obtains approval for a proposed verification resampling and analysis plan, a minimum of two (2) independent samples must be collected when verification of a statistically significant increase is attempted.

(c) Until the owner, operator, or permittee obtains approval for a verification resampling plan, the commissioner shall consider ~~an observed statistically significant increase~~ **a preliminary exceedance** to be verified if:

- (1) any of the verification resamples confirm a statistically significant increase over background ground water quality; or
- (2) the owner, operator, or permittee chooses not to institute a verification resampling program.

(d) Within fourteen (14) days following the verification resampling determination, the owner, operator, or permittee shall notify the commissioner, in verbal or written format, of the following:

- (1) The results of the verification resampling and analysis program.
- (2) An intention, on the part of the owner, operator, or permittee to submit a demonstration pursuant to section 9 of this rule.

(e) The detection ground water monitoring program or the assessment ground water monitoring program shall continue throughout the verification resampling program. Progression to an assessment or corrective action ground water monitoring program shall be based on the verification resampling results, regardless of subsequent detection monitoring results if the verification resampling program extends into the next scheduled sampling event.

(f) Following the completion of a verification resampling program, a report must be submitted to the commissioner no later than sixty (60) days following the last verification resampling event or thirty (30) days prior to the next scheduled semiannual sampling event, whichever occurs first. This report must be written and include the following:

- (1) All information required under section 1(t) of this rule.
- (2) The date the commissioner was notified as required in subsection (d).
- (3) Whether the ground water monitoring program will:
 - (A) remain in detection monitoring or assessment monitoring;
 - (B) initiate an assessment monitoring program; or
 - (C) initiate a corrective action program.
- (4) Whether the owner, operator, or permittee intends to make a demonstration pursuant to section 9 of this rule.
- (5) Results of the verification resampling, including information required by section 1(t)(3) through 1(t)(5) of this rule.

(g) If the verification sampling program determines that a statistically significant increase did occur, the owner, operator, or permittee:

- (1) must initiate an assessment ground water monitoring program that meets the requirements of section 10 of this rule or a corrective action program that meets the requirements of section 13 of this rule, whichever program is applicable; or
- (2) may choose to make a demonstration pursuant to section 9 of this rule, while maintaining a detection monitoring program.

(h) The commissioner may approve an extension of the submittal deadlines required by subsection (f) if the owner, operator, or permittee:

- (1) requests an extension; and
- (2) provides an **adequate** explanation for the need of an extension.

(Solid Waste Management Board; 329 IAC 10-21-8; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1869; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2805; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3850)

SECTION 79. 329 IAC 10-21-9 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-9 Demonstration that a statistically significant increase or contamination is not attributable to a municipal solid waste land disposal facility unit

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 9. (a) If a **verified** statistically significant increase in a constituent concentration has been determined, the owner, operator, or permittee may demonstrate that the **verified** statistically significant increase was caused by:

- (1) a source other than the MSWLF unit;
- (2) an error in sampling technique, laboratory analysis, or statistical evaluation; or
- (3) natural variation in ground water quality.

(b) If the owner, operator, or permittee intends to make a demonstration under this section, the owner, operator, or permittee shall submit, within fourteen (14) days of verifying a statistically significant increase, a plan that describes:

- (1) the general approach that will demonstrate that the MSWLF unit did not cause the verified statistical increase; and
- (2) a schedule to complete the demonstration. Based on previous ground water data and the thoroughness of the plan submitted under subdivision (1), the commissioner may modify the proposed schedule.

(c) If a demonstration is approved by the commissioner, the owner, operator, or permittee may continue detection ground water monitoring or assessment ground water monitoring, whichever is applicable.

(d) ~~If the owner, operator, or permittee is unable to submit a successful demonstration~~ **a demonstration is not approved based on items listed in (a), or the demonstration is not submitted** within the time frame specified in subsection (b)(2), ~~then~~ the owner, operator, or permittee shall initiate either an assessment ground water monitoring program or a corrective action program, whichever program is applicable. **The owner, operator, or permittee may continue the demonstration process while implementing an assessment ground water monitoring program or a corrective action program, whichever is applicable. If, subsequently, the extended demonstration process proves that the MSWLF unit is not the source of the verified statistically significant increase, the MSWLF unit may return to detection monitoring or assessment monitoring provided there have been no other verified statistically significant increases.**

(e) ~~If a successful demonstration is not submitted within the time frame identified in subsection (b)(2), the owner, operator, or permittee may extend the demonstration process while implementing an assessment ground water monitoring program or a corrective action program, whichever is applicable. If, subsequently, the extended demonstration process proves successful, the MSWLF unit may return to detection monitoring or assessment~~

~~monitoring, pursuant to section 7 of this rule, provided there have been no other verified statistically significant increases.~~

~~(f)~~ (e) The detection monitoring program or the assessment monitoring program, whichever is applicable, must be continued throughout the demonstration period identified in subsection (b)(2).

~~(g)~~ (f) The commissioner shall consider that a statistically significant increase is attributable to the MSWLF unit if the owner, operator, or permittee chooses not to demonstrate pursuant to this section. (*Solid Waste Management Board; 329 IAC 10-21-9; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1870; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2805; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3851*)

SECTION 80. 329 IAC 10-21-10 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-10 Assessment ground water monitoring program

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 10. (a) Establishment of an assessment ground water monitoring program is required upon any of the following circumstances:

- (1) When the owner, operator, or permittee has verified that a statistically significant increase over background levels has occurred for any constituent listed in section 15(a) of this rule (Table 1A) at any ground water monitoring well at the monitoring boundary of the MSWLF unit, and a demonstration pursuant to section 9 of this rule has not been approved by the commissioner.
- (2) When the owner, operator, or permittee is engaged in a corrective action program specified under section 13 of this rule.
- (3) When the owner, operator or permittee of an existing MSWLF is conducting, as of the effective date of this article, a Phase II ground water monitoring program as specified under 329 IAC 2-16, which was repealed in 1996.

(b) The owner, operator, or permittee shall conduct an assessment ground water monitoring program in accordance with the following requirements:

- (1) Within ninety (90) days after determining that the owner, operator, or permittee of an MSWLF must conduct assessment ground water monitoring, all **ground water monitoring** wells containing constituents with statistically significant elevated concentrations, and all **ground water monitoring wells within six hundred (600) feet of the well with the statistically significant elevated concentrations and monitoring the same hydrogeologic unit of the well with the elevated concentrations** ~~their adjacent wells~~, must be sampled and analyzed for all constituents listed in section 16 of this rule (Table 2). If deemed necessary, the commissioner may require samples to be collected and analyzed from additional **monitoring** wells.
- (2) Within fourteen (14) days after receiving certified laboratory results from the final sampling conducted under subdivision (1), the owner, operator, or permittee shall submit to the commissioner written notification of the following information for any constituent listed in section 16 of this rule (Table 2) that is detected:
 - (A) The identity and recorded concentration of the constituent.
 - (B) The identity of each ground water monitoring well where the constituent was detected.
- (3) A copy of the notification required under subdivision (2) and a copy of the certified laboratory results must be placed in the operating record within thirty (30) days of receiving the original certified laboratory results.
- (4) The owner, operator, or permittee shall collect and analyze a minimum of four (4) independent samples from each ground water monitoring well identified in subdivision (2) in order to establish background ground water quality. Certified laboratory analyses of the independent ground water samples must be submitted to the commissioner no later than thirty (30) days prior to the next scheduled semiannual sampling event.
- (5) The owner, operator, or permittee shall establish a ground water protection standard as described in section 11 of this rule for any constituent that has been detected in ground water samples collected under subdivision (1).

(6) The owner, operator, or permittee shall, during subsequent sampling events, collect at least one (1) independent sample from each **ground water monitoring** well designated to be in an assessment monitoring program as identified in subdivision (2)(B). Each independent sample must be analyzed for all constituents detected and identified in subdivision (2)(A).

(c) For sampling events during assessment ground water monitoring, the commissioner may do the following:

(1) Specify an appropriate subset of ground water monitoring wells to sample and analyze for constituents in section 16 of this rule (Table 2).

(2) Specify a constituent or constituents from section 16 of this rule (Table 2) that may be deleted from the constituent monitoring list upon demonstration by the owner, operator, or permittee that the constituent to be deleted is:

(A) not reasonably expected to be in the solid waste;

(B) not derived from the solid waste;

(C) naturally occurring in the soil that underlies the site and would be soluble in ground water at the detected levels, even in the absence of the MSWLF unit; ~~or and~~

(D) not a constituent of concern based on historical ground water quality.

(3) Specify a constituent or constituents that may be added to the ~~constituent assessment~~ monitoring **constituent** list, based on historical, ground water quality, **analysis of leachate derived from the MSWLF**, or wastes placed in the MSWLF unit.

(4) Specify an alternate frequency for repeated sampling and analysis of the ground water for the full set of constituents in section 16 of this rule (Table 2). The sampling frequency for constituents in section 15 (Table 1A and Table 1B) may be altered, provided it is at least an annual frequency. The alternate frequency must continue throughout the active life, closure, and post-closure care periods of the MSWLF. The alternate frequency must be based on consideration of the following factors:

(A) Sedimentology of the aquifer and unsaturated zone.

(B) Hydraulic conductivity of the aquifer and unsaturated zone.

(C) Ground water flow rates.

(D) Minimum distance between upgradient solid waste boundary of the MSWLF unit and downgradient monitoring well screen.

(E) Resource value of the aquifer.

(F) The fate of any constituents detected.

(G) The mode of transport of any detected constituents.

(H) Ground water quality data.

(I) Other information as required by the commissioner for the demonstration.

(d) After establishing background ground water quality described in subsection (b)(4), subsequent semiannual sampling events must include the following:

(1) At least one (1) independent sample from all the ground water monitoring wells that are included in both detection and assessment ground water monitoring programs and any other **monitoring** wells specified by the commissioner.

(2) Analysis for all constituents included in both detection and assessment ground water monitoring programs.

(3) Determination if there is a verified statistically significant increase for all constituents identified in subsection (2). The determination shall be in accordance with section 6 of this rule and subsection (f).

~~(3)~~ **(4)** Submittal of the information required in section 1(t) of this rule.

(e) Starting from the date that an assessment ground water monitoring program is required, ground water samples must be collected and analyzed for all constituents in section 16 of this rule (Table 2) on an annual basis, or at an alternate frequency specified by the commissioner. Samples for assessment monitoring must be collected from each **ground water monitoring** well identified in subsection (b)(2)(B). For these sampling events, the owner, operator, or permittee shall:

(1) for this sampling event, submit written notification as described in subsection (b)(2);

- (2) establish background ground water quality as described in subsection (b)(4) for any constituent that has been detected in ground water samples collected during this sampling event;
- (3) establish a ground water protection standard as described in section 11 of this rule for any constituent that has been detected in ground water samples collected during the sampling event;
- (4) for subsequent sampling events following the sampling event required under this section, include sampling for all constituents listed in subdivision (1); and
- (5) include the sampling event in the assessment monitoring sample event schedule.

(f) During assessment ground water monitoring, the owner, operator, or permittee shall proceed according to the following:

(1) If the concentration of ~~any~~ **a** constituent listed in section 16 of this rule (Table 2) is determined to be less than or equal to background ground water quality, for two (2) consecutive semiannual sampling events, then the owner, operator, or permittee may request from the commissioner permission to **remove the constituent from the assessment monitoring list. When the concentrations of all constituents listed in section 16 of this rule (Table 2) is determined to be less than or equal to background ground water quality, for two (2) consecutive semiannual sampling events, then the owner, operator, or permittee may request from the commissioner permission to** return to a detection monitoring program.

(2) If the concentration of any constituent listed in section 16 of this rule (Table 2) is determined to be a statistically significant increase over background ground water quality, but below the ground water protection standard established in section 11 of this rule, then assessment ground water monitoring must continue in accordance with this section.

(3) If a statistically significant increase above the ground water protection standard is determined for any constituent listed in section 16 of this rule (Table 2), the owner, operator, or permittee shall perform the following:

(A) Notify the commissioner within fourteen (14) days of this determination. The notification to the commissioner must include the following information:

- (i) A list of all constituents in section 16 of this rule (Table 2) that have a statistically significant increase above the ground water protection standard established under section 11 of this rule.
- (ii) The identification of each ground water monitoring well from which samples indicated a statistically significant increase.
- (iii) Whether or not the owner, operator, or permittee intends to institute verification procedures and resampling as described under section 8 of this rule.

(B) In the event that a corrective action program is to be implemented, notify all pertinent local officials, including the county commissioner, and officials of the solid waste management district and the county health department.

(C) Within ninety (90) days of a determination under this subdivision, submit to the commissioner an initial proposal for a corrective action program that is designed to meet the requirements of section 13(b) of this rule unless the owner, operator, or permittee chooses to:

- (i) institute a verification resampling program described in section 8 of this rule; or
- (ii) submit a demonstration pursuant to section 9 of this rule.

(D) Remain in an assessment ground water monitoring program, which the commissioner may modify.

(g) During assessment ground water monitoring, whenever the concentration of a secondary constituent identified in section 11(c) of this rule is found to exceed levels that are twice the ground water protection standard, as established in section 11 of this rule, the owner, operator, or permittee shall perform the following:

(1) Notify the commissioner within fourteen (14) days of the finding. This notification must include the following information:

- (A) The identity and most recent concentration of any secondary constituent found to have the excessive levels.
- (B) The identification of each ground water monitoring well found to have excessive levels of a secondary constituent.
- (C) Whether verification resampling, as described under section 8 of this rule, will be initiated.

(2) Submit, if so directed by the commissioner, a proposal for a corrective action program. The proposal must be submitted within ninety (90) days after receiving notification from the commissioner that the proposal is required and must be in accordance with the requirements of section 13(b) of this rule, provided the owner, operator, or permittee:

(A) does not institute a verification resampling program pursuant to section 8 of this rule; and

(B) does not choose to submit a demonstration pursuant to section 9 of this rule.

(3) Remain in an assessment ground water monitoring program, which the commissioner may modify.

(h) If it is determined that the MSWLF is the cause of concentrations exceeding the secondary maximum contaminant levels established for chloride, sulfate, and total dissolved solids at the property boundary of the MSWLF, then the owner, operator, or permittee may be required to establish a corrective action program under section 13 of this rule to ensure the elevated concentrations do not go beyond the property boundary. *(Solid Waste Management Board; 329 IAC 10-21-10; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1870; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2806; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3852)*

SECTION 81. 329 IAC 10-21-13 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-13 Corrective action program

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 13. (a) The owner, operator, or permittee must submit a proposal for a plume and site characterization plan, as described in subsection (b), and initiate an assessment of various corrective measures, as described in subsection (d), within ninety (90) days of determining any of the following:

(1) A statistically significant increase above any ground water protection standard, as identified in section 11(a) or 11(b) of this rule, has occurred during an assessment ground water monitoring program for any constituent that is listed in section 16 of this rule (Table 2).

(2) At the request of the commissioner, and during assessment monitoring, a secondary constituent listed under section 11(c) of this rule has exceeded levels that are twice the ground water protection standard for that constituent.

(3) At the request of the commissioner, and during detection monitoring, a constituent listed in section 15(a) of this rule (Table 1A) has shown a concentration that is a statistically significant increase over a ground water protection standard established during a previous assessment monitoring program. Previous monitoring programs include those programs conducted under section 10 of this rule, or Phase II programs conducted under 329 IAC 2-16, which was repealed in 1996.

(b) The proposal for a plume and site characterization plan must include the following:

(1) Characterization of the chemical and physical nature of the contaminants, including vertical and horizontal extent of the release by:

(A) proposing location and installation procedures for additional assessment ground water monitoring wells, as necessary; and

(B) identification of all constituents to be analyzed during subsequent ground water sampling events.

(2) Characterization of the contaminated aquifer, limited to the area of the contamination plume. Aquifer characterization may include all of the items described in this subsection.

(3) Proposed location and installation procedures of at least one (1) additional ground water monitoring well at the facility boundary in the direction of contaminant migration.

(4) The process by which all persons who own or reside on land that directly overlies any part of the contaminated ground water plume will be notified.

(5) The process for sampling and analyzing ground water at any private or public intake, as specified by the commissioner, unless permission to sample cannot be obtained from the owner of the intake.

(6) The process by which drinking water will be supplied to all public and private ground water intakes affected by the contamination.

(7) Procedures that will be implemented to stop further migration of contaminants.

(c) Implementation of the plume and site characterization plan must include the following:

(1) Within thirty (30) days of receiving written approval of the initial corrective action proposal, the owner, operator, or permittee shall implement subsection (b)(1) through (b)(7).

(2) The owner, operator, or permittee shall submit a corrective action progress report, including any sampling and analysis results, on a semiannual basis, until the contamination has been determined to be cleaned up as defined in subsection (j).

(3) The ground water monitoring well identified in subsection (b)(3) must be sampled in accordance with section 10(b) and 10(d) of this rule.

(4) If any additional constituent is detected in the **ground water** monitoring well identified in subsection (b)(3) and that constituent exceeds its ground water protection standard at a statistically significant concentration, then the owner, operator, or permittee shall include that constituent in the sampling of the ground water monitoring wells identified in subsection (b)(1).

(5) The owner, operator, or permittee shall gather sufficient information from the plume and site characterization plan to be presented at the public meeting required in section 12 of this rule and incorporated in the final decision on an corrective action remedy as described in subsection (e).

(d) The assessment of various corrective measures must be initiated within ninety (90) days of determining that a corrective action program is necessary. The owner, operator, or permittee shall complete the assessment of various corrective measures in a reasonable time, with the approval of the commissioner, and in accordance with the following:

(1) The assessment of various corrective measures must include an analysis of the effectiveness of potential corrective measures in meeting all of the remedy requirements and objectives as described in subsection (e).

(2) The analysis must include the following:

(A) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies. This shall include safety impacts, cross-media impacts, and control of exposure to any residual contamination.

(B) The time required to begin and complete the remedy.

(C) Implementation costs of the proposed remedy.

(D) The institutional requirements, such as state or local permit requirements, or other environmental or public health requirements that may substantially affect remedy implementation.

(E) A discussion by the owner, operator, or permittee of the corrective measures assessment, prior to the selection of a remedy, in a public meeting as required in section 12 of this rule.

(3) The owner, operator, or permittee shall continue to monitor in accordance with the assessment ground water monitoring program as required in section 10 of this rule.

(e) The selection of the corrective action remedy must be based on the assessment of various corrective measures conducted under subsection (d), including the following:

(1) The owner, operator, or permittee shall:

(A) select a remedy that, at a minimum, meets the standards listed in subdivision (2); and

(B) submit to the commissioner, within sixty (60) days after the public meeting required in section 12 of this rule, a report describing the selected remedy and how the remedy meets the standards of subdivision (2).

(2) The owner, operator, or permittee shall select a remedy that:

(A) will be protective of human health ~~and~~ **or** the environment;

(B) will attain the ground water protection standard as required in section 11 of this rule;

(C) will reduce or eliminate, to the maximum extent practicable, further releases of those constituents in sections 15 and 16 of this rule (Table 1A, Table 1B, and Table 2), and in section 11(c) of this rule that may pose a threat to human health or the environment;

(D) will comply with standards for waste management as required in subsection (i); and

(E) is chosen after considering input from the public hearing required under section 12 of this rule.

(3) In selecting a remedy that meets the standards of subdivision (2), a report must be submitted that includes the following factors:

(A) The long and short term effectiveness and protection that is offered by the potential remedy, along with an assessment of the remedy's probable outcome, based on the following considerations:

- (i) The magnitude of reduction in the existing risks.
- (ii) The magnitude of residual risks in terms of likelihood of further releases, due to waste remaining after implementing a remedy.
- (iii) The type and degree of long term management required, including monitoring, operation, and maintenance.
- (iv) The short term risks that might be posed to the community, workers, or the environment during the implementation of such a remedy. Short term risk assessment shall include potential threats to human health ~~and~~ **or** the environment associated with excavation, transportation, redisposal, or containment of waste or contaminated materials.
- (v) The estimated time until corrective measures are completed.
- (vi) The potential for exposure of humans and environmental receptors to remaining waste, including the potential threat associated with excavation, transportation, redisposal, or containment of waste or contaminated materials.
- (vii) The long term reliability of the engineering and institutional controls.
- (viii) The potential need for additional or alternative remedies.

(B) The effectiveness of the remedy in controlling the source and in reducing further releases based on the following considerations:

- (i) The extent to which containment practices will reduce further releases.
- (ii) The extent to which treatment technologies may be used to reduce further releases.

(C) The ease or difficulty of implementing a potential remedy based on the following considerations:

- (i) The technical difficulty of constructing the proposed remedy.
- (ii) The expected operational reliability of the proposed remedial technologies.
- (iii) The need to coordinate with and obtain necessary approvals and permits from other local or state agencies.
- (iv) The availability of necessary equipment and specialists.
- (v) The available capacity and location of needed treatment, storage, and disposal facilities.

(D) The capability of the owner, operator, or permittee to manage the technical and economic aspects of the corrective measures.

(E) The degree to which community concerns are addressed by a potential remedy.

(4) The selected remedy report, as described in subdivision (1)(B), must include a schedule for initiating and completing remedial activities. This schedule must be based on the following considerations:

(A) Vertical and horizontal extent, and physical or chemical characteristics of contamination.

(B) Direction of contaminant movement.

(C) Capacity of remedial technologies to achieve compliance with ground water protection standards, as established under section 11 of this rule, and any other remedial objectives.

(D) Availability of treatment or disposal capacity for waste volumes managed during implementation of remedial measures.

(E) Practical considerations of proposing to use currently unavailable technology that may offer significant advantages over readily available technology, in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives.

(F) Potential risks to human health ~~and~~ **or** the environment from exposure to contamination prior to completing remedial measures.

(G) Resource value of the zone of saturation or aquifer, including the following:

- (i) Current and future uses.
- (ii) Proximity and withdrawal rate of users.
- (iii) Ground water quantity and quality.
- (iv) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

- (v) The hydrogeologic characteristics of the MSWLF and surrounding land.
 - (vi) Ground water removal and treatment costs.
 - (vii) The cost and availability of alternative water supplies.
 - (H) Practical capability of the owner, operator, or permittee to achieve the remedy.
 - (I) Other relevant factors that may be determined by the commissioner.
- (5) Selection of a remedy and implementation schedule must be submitted to the commissioner for review and approval.
- (6) The commissioner may determine that remediation of a released constituent, listed in either section 16 of this rule (Table 2) or in section 11(c) of this rule, is not necessary if either of the following are demonstrated to the satisfaction of the commissioner:
- (A) Remediation is technically impracticable.
 - (B) Remediation would result in unacceptable cross-media impacts.
- (7) If the commissioner determines that an aquifer cannot be remediated, the owner, operator, or permittee shall contain the aquifer to prevent the migration of contaminants.
- (8) A determination made by the commissioner under subdivision (6) will not affect the authority of the state to require source control measures or other necessary measures to:
- (A) eliminate or minimize further releases to the ground water;
 - (B) prevent exposure to the ground water; or
 - (C) remediate ground water quality to technically achievable concentrations and significantly reduce threats to human health or the environment.
- (f) Based on the schedule established under subsection (e)(4) and approved by the commissioner under subsection (e)(5), the owner, operator, or permittee shall do the following:
- (1) Establish and implement a corrective action ground water monitoring program that:
 - (A) at a minimum, meets the requirements of an assessment monitoring program under section 10 of this rule;
 - (B) indicates the effectiveness of the corrective action remedy; and
 - (C) demonstrates compliance with the ground water protection standard under subsection (j).
 - (2) Implement the corrective action remedy selected under subsection (e).
 - (3) Take any interim measures necessary to ensure the protection of human health ~~and~~ **or** the environment. Interim measures must, to the greatest extent practicable, be consistent with remedial objectives and, if possible, contribute to the performance of remedial measures. The following factors must be considered in determining whether interim measures are necessary:
 - (A) Time required to develop and implement a final remedy.
 - (B) Actual and potential exposure of nearby populations or environmental receptors to regulated constituents.
 - (C) Actual and potential contamination of potentially useable water supplies or sensitive ecosystems.
 - (D) Further degradation of the ground water that may occur if remedial action is not initiated expeditiously.
 - (E) Weather conditions that may cause regulated constituents to migrate or be released.
 - (F) Potential for:
 - (i) fire or explosion; or
 - (ii) exposure to regulated constituents as a result of an accident, a container failure, or a handling system failure.
 - (G) Other situations that may pose threats to human health ~~and~~ **or** the environment.
 - (4) Submit a report to the commissioner detailing the progress and performance of the selected remedy. The report must be submitted on a semiannual basis or as determined by the commissioner.
- (g) An owner, operator, or permittee or the commissioner may determine, based on information developed after implementation of the remedy has begun or on other information, that compliance under subsection (e)(2) is not being achieved through the remedy selected. In such cases, after approval by the commissioner, the owner, operator, or permittee shall implement other methods or techniques that could practicably achieve compliance with the requirements unless the owner, operator, or permittee makes a determination under subsection (h).

- (h) If the owner, operator, or permittee determines that compliance with requirements under subsection (e)(2) cannot be technically achieved with any currently available methods, the owner, operator, or permittee shall:
- (1) apply for a commissioner's certification that compliance with requirements under subsection (e)(2) cannot be achieved with any currently available methods;
 - (2) implement alternate measures to contain contamination, as necessary, to protect human health, the environment and water resources;
 - (3) implement alternate measures that are technically practicable and consistent with the overall remedial objective to:
 - (A) control contamination sources; and
 - (B) remove or decontaminate equipment, units, devices, or structure; and
 - (4) within fourteen (14) days of determining that compliance cannot be achieved under subsection (g), submit a report to the commissioner that justifies the alternative measures. The report must be approved by the commissioner prior to implementation of any alternative measures.
- (i) During a corrective action program, all solid waste managed under a remedy that is required under subsection (e), or under an interim measure that is required under subsection (f)(3), must be managed in a manner that:
- (1) is protective of human health ~~and~~ **or** the environment; and
 - (2) complies with the applicable requirements of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 et seq., as amended by the Hazardous and Solid Waste Amendments of 1984.
- (j) Remedies selected under subsection (e) are considered complete when the owner, operator, or permittee has demonstrated to the satisfaction of the commissioner the following:
- (1) Ground water protection standards have been met at all points within the plume of contamination.
 - (2) For a period of three (3) consecutive years, using statistical procedures and performance standards outlined in section 6 of this rule, the following ground water protection standard, whichever is applicable, has not been exceeded:
 - (A) The ground water protection standards for the constituents listed in section 16 of this rule (Table 2).
 - (B) Levels that are twice the concentration of any secondary constituent identified in section 11(c) of this rule.
 - (3) All corrective actions required to complete the remedy have been satisfied.
- (k) The commissioner may, after considering the factors indicated in subsection (l), specify an alternate period during which the following demonstration, whichever is applicable, must be made:
- (1) The concentrations of the constituents listed in section 16 of this rule (Table 2) have not exceeded ground water protection standards.
 - (2) The concentrations of constituents listed in section 11(c) of this rule have not exceeded levels that are twice the ground water protection standard.
- (l) The following factors will be considered by the commissioner in specifying an alternative time period:
- (1) Vertical and horizontal extent and concentration of the release.
 - (2) Physical and chemical characteristics of the regulated constituents within the ground water.
 - (3) Accuracy of the ground water monitoring or modeling techniques, including any seasonal, meteorological, or other environmental variabilities that may affect the accuracy.
 - (4) Physical and chemical characteristics of the affected ground water.
 - (5) Physical and chemical characteristics of the affected or potentially affected aquifer system.
- (m) Within fourteen (14) days after the completion of all remedial measures, a certification report, signed by the owner, operator, or permittee and a qualified ground water scientist, shall be submitted to the commissioner for written approval. The report must certify that the remedy has been completed in compliance with the requirements of subsection (j).

(n) Upon receipt of the commissioner's written approval of the certification report specified in subsection (m), the owner, operator, or permittee shall be released from the requirements for financial assurance for corrective action specified in 329 IAC 10-39-10.

(o) Corrective action programs that have been initiated under 329 IAC 1.5, which was repealed in 1989, or under 329 IAC 2, which was repealed in 1996, must continue as approved by the commissioner, and the commissioner may incorporate requirements **found** under this rule. (*Solid Waste Management Board; 329 IAC 10-21-13; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1874; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2808; errata filed Jun 10, 1998, 9:23 a.m.: 21 IR 3939; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3855*)

SECTION 82. 329 IAC 10-21-15 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-15 Constituents for detection monitoring

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 15. (a) The following constituents shall be measured during detection monitoring and be subject to statistical evaluation procedures under section 6 of this rule:

TABLE 1A
Constituents for Detection Monitoring Subject to
Statistical Evaluation Procedures

| Common Name ¹ | CAS RN ² |
|--|---------------------|
| (1) Ammonia (as N) | 71-43-2 |
| (2) Benzene | (Dissolved) |
| (3) Cadmium | 56-23-5 |
| (4) Carbon tetrachloride | 108-90-7 |
| (5) Chloride | 75-00-3 |
| (6) Chlorobenzene | 67-66-3 |
| (7) Chloroethane; Ethyl chloride | (Dissolved) |
| (8) Chloroform; Trichloromethane | (Dissolved) |
| (9) Chromium | 95-50-1 |
| (10) Copper | 106-46-7 |
| (11) o-Dichlorobenzene; 1,2-Dichlorobenzene | 75-34-3 |
| (12) p-Dichlorobenzene; 1,4-Dichlorobenzene | 107-06-2 |
| (13) 1,1-Dichloroethane; Ethylidene chloride | 75-35-4 |
| (14) 1,2-Dichloroethane; Ethylene dichloride | 156-59-2 |
| (15) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride | 156-60-5 |
| (16) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene | 78-87-5 |
| (17) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene | 10061-01-5 |
| (18) 1,2-Dichloropropane; Propylene dichloride | 10061-02-6 |
| (19) cis-1,3-Dichloropropene | 100-41-4 |
| (20) trans-1,3-Dichloropropene | 74-83-9 |
| (21) Ethylbenzene | 74-87-3 |
| (22) Methyl bromide; Bromomethane | 75-09-2 |
| (23) Methyl chloride; Chloromethane | 100-42-5 |
| (24) Methylene chloride; Dichloromethane | (Dissolved) |
| (25) Styrene | 630-20-6 |
| (26) Sodium | 79-34-5 |
| (27) Sulfate | 127-18-4 |
| (28) 1,1,1,2-Tetrachloroethane | |
| (29) 1,1,2,2-Tetrachloroethane | |
| (30) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene | |

| | |
|--|-------------|
| (31) Toluene | 108-88-3 |
| (32) 1,1,1-Trichloroethane; Methylchloroform | 71-55-6 |
| (33) 1,1,2-Trichloroethane | 79-00-5 |
| (34) Trichloroethylene; Trichloroethene | 79-01-6 |
| (35) Trichlorofluoromethane; CFC-11 | 75-69-4 |
| (36) Vinyl chloride; Chloroethene | 75-01-4 |
| (37) Xylene (Total) | See note 3 |
| (38) Zinc | (Dissolved) |

Inorganics:

| | |
|--------------------------|-------------|
| (1) Ammonia (as N) | |
| (2) Cadmium | (Dissolved) |
| (3) Chloride | |
| (4) Chromium | (Dissolved) |
| (5) Copper | (Dissolved) |
| (6) Sodium | (Dissolved) |
| (7) Sulfate | |

Volatile organic compounds:

| | |
|--|------------|
| (9) Benzene | 71-43-2 |
| (10) Carbon tetrachloride | 56-23-5 |
| (11) Chlorobenzene | 108-90-7 |
| (12) Chloroethane; Ethyl chloride | 75-00-3 |
| (13) Chloroform; Trichloromethane | 67-66-3 |
| (14) o-Dichlorobenzene; 1,2-Dichlorobenzene | 95-50-1 |
| (15) p-Dichlorobenzene; 1,4-Dichlorobenzene | 106-46-7 |
| (16) 1,1-Dichloroethane; Ethylidene chloride | 75-34-3 |
| (17) 1,2-Dichloroethane; Ethylene dichloride | 107-06-2 |
| (18) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride | 75-35-4 |
| (19) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene | 156-59-2 |
| (20) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene | 156-60-5 |
| (21) 1,2-Dichloropropane; Propylene dichloride | 78-87-5 |
| (22) cis-1,3-Dichloropropene | 10061-01-5 |
| (23) trans-1,3-Dichloropropene | 10061-02-6 |
| (24) Ethylbenzene | 100-41-4 |
| (25) Methyl bromide; Bromomethane | 74-83-9 |
| (26) Methyl chloride; Chloromethane | 74-87-3 |
| (27) Methylene chloride; Dichloromethane | 75-09-2 |
| (28) Styrene | 100-42-5 |
| (29) 1,1,1,2-Tetrachloroethane | 630-20-6 |
| (30) 1,1,2,2-Tetrachloroethane | 79-34-5 |
| (31) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene | 127-18-4 |
| (32) Toluene | 108-88-3 |
| (33) 1,1,1-Trichloroethane; Methylchloroform | 71-55-6 |
| (34) 1,1,2-Trichloroethane | 79-00-5 |
| (35) Trichloroethylene; Trichloroethene | 79-01-6 |
| (36) Trichlorofluoromethane; CFC-11 | 75-69-4 |
| (37) Vinyl chloride; Chloroethene | 75-01-4 |
| (38) Xylene (Total) | See note 3 |

(b) The following constituents shall be measured during detection monitoring but are exempt from statistical evaluation procedures under section 6 of this rule:

TABLE 1B

Constituents for Detection Monitoring Not Subject to
Statistical Evaluation Procedures

| | |
|--|--------------------|
| (1) Field pH | |
| (2) Field specific conductance | |
| (3) Field Eh (Oxidation-Reduction Potential) | |
| (4) Field dissolved oxygen | |
| (5) Total solids | |
| (6) Total dissolved solids | |
| (7) Alkalinity | |
| (8) Arsenic | (Dissolved) |
| (8) (9) Bicarbonate | |
| (9) (10) Calcium | (Dissolved) |
| (10) (11) Carbonate | |
| (11) (12) Iron | (Dissolved) |
| (12) (13) Magnesium | (Dissolved) |
| (13) (14) Manganese | (Dissolved) |
| (14) (15) Potassium | (Dissolved) |

Notes:

¹Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

²Chemical Abstracts Service registry number. Where “(Dissolved)” is entered, all species in a filtered sample of the ground water that contain this element are included.

³Xylene (total). This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1130-20-7).

(Solid Waste Management Board; 329 IAC 10-21-15; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1879; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2812)

SECTION 83. 329 IAC 10-21-16 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-21-16 Constituents for assessment monitoring

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 16. (a) The following constituents **in this section** shall be subject to assessment monitoring procedures under section 10 of this rule.

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name</u> ¹ | <u>CAS RN</u> ² |
|---------------------------------|----------------------------|
| Acenaphthylene | 208-96-8 |
| Acenaphthene | 83-32-9 |
| Acetone | 67-64-1 |
| Acetonitrile; Methyl cyanide | 75-05-8 |
| Acetophenone | 98-86-2 |
| 2-Acetylaminofluorene; 2-AAF | 53-96-3 |
| Acrolein | 107-02-8 |
| Acrylonitrile | 107-13-1 |
| Aldrin | 309-00-2 |
| Allyl chloride | 107-05-1 |
| 4-Aminobiphenyl | 92-67-1 |
| Anthracene | 120-12-7 |
| Antimony | (Total) |
| Antimony | (Dissolved) |

| | |
|---|-------------|
| Arsenic | (Total) |
| Arsenic | (Dissolved) |
| Barium | (Total) |
| Barium | (Dissolved) |
| Benzene | 71-43-2 |
| Benzo[a]anthracene; Benzanthracene | 56-55-3 |
| Benzo[b]fluoranthene | 205-99-2 |
| Benzo[k]fluoranthene | 207-08-9 |
| Benzo[ghi]perylene | 191-24-2 |
| Benzo[a]pyrene | 50-32-8 |
| Benzyl alcohol | 100-51-6 |
| Beryllium | (Total) |
| Beryllium | (Dissolved) |
| alpha-BHC | 319-84-6 |
| beta-BHC | 319-85-7 |
| delta-BHC | 319-86-8 |
| gamma-BHC; Lindane | 58-89-9 |
| Bis(2-chloroethoxy) methane | 111-91-1 |
| Bis(2-chloroethyl) ether; Dichloroethyl ether | 111-44-4 |
| Bis(2-chloro-1-methylethyl) ether; 2,2-Dichlorodiisopropyl ether; DCIP (See note 3) | 108-60-1 |
| Bis(2-ethylhexyl) phthalate | 117-81-7 |
| Bromochloromethane; Chlorobromomethane | 74-97-5 |
| Bromodichloromethane; Dichlorobromomethane | 75-27-4 |
| Bromoform; Tribromomethane | 75-25-2 |
| 4-Bromophenyl phenyl ether | 101-55-3 |
| Butyl benzyl phthalate; Benzyl butyl phthalate | 85-68-7 |
| Cadmium | (Total) |
| Cadmium | (Dissolved) |
| Carbon disulfide | 75-15-0 |
| Carbon tetrachloride | 56-23-5 |
| Chlordane | See note 4 |
| p-Chloroaniline | 106-47-8 |
| Chlorobenzene | 108-90-7 |
| Chlorobenzilate | 510-15-6 |
| p-Chloro-m-cresol; 4-Chloro-3-methylphenol | 59-50-7 |
| Chloroethane; Ethyl chloride | 75-00-3 |
| Chloroform; Trichloromethane | 67-66-3 |
| 2-Chloronaphthalene | 91-58-7 |
| 2-Chlorophenol | 95-57-8 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 |
| Chloroprene | 126-99-8 |
| Chromium | (Total) |
| Chromium | (Dissolved) |
| Chrysene | 218-01-9 |
| Cobalt | (Total) |
| Cobalt | (Dissolved) |
| Copper | (Total) |
| Copper | (Dissolved) |
| m-Cresol; 3-Methylphenol | 108-39-4 |
| o-Cresol; 2-Methylphenol | 95-48-7 |
| p-Cresol; 4-Methylphenol | 106-44-5 |
| Cyanide | 57-12-5 |

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|---|------------|
| 2,4-D; 2,4-Dichlorophenoxyacetic acid | 94-75-7 |
| 4,4'-DDD | 72-54-8 |
| 4,4'-DBE | 72-55-9 |
| 4,4'-DDT | 50-29-3 |
| Diallate | 2303-16-4 |
| Dibenz[a,h]anthracene | 53-70-3 |
| Dibenzofuran | 132-64-9 |
| Dibromochloromethane; Chlorodibromomethane | 124-48-1 |
| 1,2-Dibromo-3-chloropropane; DBCP | 96-12-8 |
| 1,2-Dibromoethane; Ethylene dibromide; EDB | 106-93-4 |
| Di-n-butyl phthalate | 84-74-2 |
| o-Dichlorobenzene; 1,2-Dichlorobenzene | 95-50-1 |
| m-Dichlorobenzene; 1,3-Dichlorobenzene | 541-73-1 |
| p-Dichlorobenzene; 1,4-Dichlorobenzene | 106-46-7 |
| 3,3'-Dichlorobenzidine | 91-94-1 |
| trans-1,4-Dichloro-2-butene | 110-57-6 |
| Dichlorodifluoromethane; CFC 12 | 75-71-8 |
| 1,1-Dichloroethane; Ethylidene chloride | 75-34-3 |
| 1,2-Dichloroethane; Ethylene dichloride | 107-06-2 |
| 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride | 75-35-4 |
| cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene | 156-59-2 |
| trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene | 156-60-5 |
| 2,4-Dichlorophenol | 120-83-2 |
| 2,6-Dichlorophenol | 87-65-0 |
| 1,2-Dichloropropane; Propylene dichloride | 78-87-5 |
| 1,3-Dichloropropane; Trimethylene dichloride | 142-28-9 |
| 2,2-Dichloropropane; Isopropylidene chloride | 594-20-7 |
| 1,1-Dichloropropene | 563-58-6 |
| cis-1,3-Dichloropropene | 10061-01-5 |
| trans-1,3-Dichloropropene | 10061-02-6 |
| Dieldrin | 60-57-1 |
| Diethyl phthalate | 84-66-2 |
| 0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin | 297-97-2 |
| Dimethoate | 60-51-5 |
| p-(Dimethylamino)azobenzene | 60-11-7 |
| 7,12-Dimethylbenz[a]anthracene | 57-97-6 |
| 3,3'-Dimethylbenzidine | 119-93-7 |
| 2,4-Dimethylphenol; m-Xylenol | 105-67-9 |
| Dimethyl phthalate | 131-11-3 |
| m-Dinitrobenzene | 99-65-0 |
| 4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol | 534-52-1 |
| 2,4-Dinitrophenol | 51-28-5 |
| 2,4-Dinitrotoluene | 121-14-2 |
| 2,6-Dinitrotoluene | 606-20-2 |
| Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol | 88-85-7 |
| Di-n-octyl phthalate | 117-84-0 |
| Diphenylamine | 122-39-4 |
| Disulfoton | 298-04-4 |
| Endosulfan I | 959-98-8 |
| Endosulfan H | 33213-65-9 |
| Endosulfan sulfate | 1031-07-8 |
| Endrin | 72-20-8 |

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|--|-------------|
| Endrin aldehyde | 7421-93-4 |
| Ethylbenzene | 100-41-4 |
| Ethyl methacrylate | 97-63-2 |
| Ethyl methanesulfonate | 62-50-0 |
| Famphur | 52-85-7 |
| Fluoranthene | 206-44-0 |
| Fluorene | 86-73-7 |
| Fluoride | |
| Heptachlor | 76-44-8 |
| Heptachlor epoxide | 1024-57-3 |
| Hexachlorobenzene | 118-74-1 |
| Hexachlorobutadiene | 87-68-3 |
| Hexachlorocyclopentadiene | 77-47-4 |
| Hexachloroethane | 67-72-1 |
| Hexachloropropene | 1888-71-7 |
| 2-Hexanone; methyl butyl ketone | 591-78-6 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 |
| Isobutyl alcohol | 78-83-1 |
| Isodrin | 465-73-6 |
| Isophorone | 78-59-1 |
| Isosafrole | 120-58-1 |
| Kepone | 143-50-0 |
| Lead | (Total) |
| Lead | (Dissolved) |
| Lithium | (Total) |
| Lithium | (Dissolved) |
| Mercury | (Total) |
| Mercury | (Dissolved) |
| Methacrylonitrile | 126-98-7 |
| Methapyrilene | 91-80-5 |
| Methoxychlor | 72-43-5 |
| Methyl bromide; Bromomethane | 74-83-9 |
| Methyl chloride; Chloromethane | 74-87-3 |
| 3-Methylcholanthrene | 56-49-5 |
| Methyl ethyl ketone; MEK; 2-Butanone | 78-93-3 |
| Methyl iodide; Iodomethane | 74-88-4 |
| Methyl methacrylate | 80-62-6 |
| Methyl methanesulfonate | 66-27-3 |
| 2-Methylnaphthalene | 91-57-6 |
| Methyl parathion; Parathion methyl | 298-00-0 |
| 4-Methyl-2-pentanone; Methyl isobutyl ketone | 108-10-1 |
| Methylene bromide; Dibromomethane | 74-95-3 |
| Methylene chloride; Dichloromethane | 75-09-2 |
| Naphthalene | 91-20-3 |
| 1,4-Naphthoquinone | 130-15-4 |
| 1-Naphthylamine | 134-32-7 |
| 2-Naphthylamine | 91-59-8 |
| Nickel | (Total) |
| Nickel | (Dissolved) |
| Nitrate (as N) | |
| o-Nitroaniline; 2-Nitroaniline | 88-74-4 |
| m-Nitroaniline; 3-Nitroaniline | 99-09-2 |

| | |
|---|-------------|
| p-Nitroaniline; 4-Nitroaniline | 100-01-6 |
| Nitrobenzene | 98-95-3 |
| o-Nitrophenol; 2-Nitrophenol | 88-75-5 |
| p-Nitrophenol; 4-Nitrophenol | 100-02-7 |
| N-Nitroso-di-n-butylamine | 924-16-3 |
| N-Nitrosodiethylamine | 55-18-5 |
| N-Nitrosodimethylamine | 62-75-9 |
| N-Nitrosodiphenylamine | 86-30-6 |
| N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine | 621-64-7 |
| N-Nitrosomethylethylamine | 10595-95-6 |
| N-Nitrosopiperidine | 100-75-4 |
| N-Nitrosopyrrolidine | 930-55-2 |
| 5-Nitro-o-toluidine | 99-55-8 |
| Parathion | 56-38-2 |
| Pentachlorobenzene | 608-93-5 |
| Pentachloronitrobenzene | 82-68-8 |
| Pentachlorophenol | 87-86-5 |
| Phenacetin | 62-44-2 |
| Phenanthrene | 85-01-8 |
| Phenol | 108-95-2 |
| p-Phenylenediamine | 106-50-3 |
| Phorate | 298-02-2 |
| Polychlorinated biphenyls; PCBs; Aroclors | See note 5 |
| Pronamide | 23950-58-5 |
| Propionitrile; Ethyl cyanide | 107-12-0 |
| Pyrene | 129-00-0 |
| Safrole | 94-59-7 |
| Selenium | (Total) |
| Selenium | (Dissolved) |
| Silver | (Total) |
| Silver | (Dissolved) |
| Silvex; 2,4,5-TP | 93-72-1 |
| Styrene | 100-42-5 |
| Sulfide | 18496-25-8 |
| 2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid | 93-76-5 |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 |
| Tetrachloroethylene; Tetrachloroethene; Perchloroethylene | 127-18-4 |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 |
| Thallium | (Total) |
| Thallium | (Dissolved) |
| Tin | (Total) |
| Tin | (Dissolved) |
| Toluene | 108-88-3 |
| o-Toluidine | 95-53-4 |
| Toxaphene | See note 6 |
| 1,2,4-Trichlorobenzene | 120-82-1 |
| 1,1,1-Trichloroethane; Methylchloroform | 71-55-6 |
| 1,1,2-Trichloroethane | 79-00-5 |
| Trichloroethylene; Trichloroethene | 79-01-6 |
| Trichlorofluoromethane; CFC-11 | 75-69-4 |

| | |
|---------------------------------|-------------|
| 2,4,5-Trichlorophenol | 95-95-4 |
| 2,4,6-Trichlorophenol | 88-06-2 |
| 1,2,3-Trichloropropane | 96-18-4 |
| 0,0,0-Triethyl phosphorothioate | 126-68-1 |
| sym-Trinitrobenzene | 99-35-4 |
| Vanadium | (Total) |
| Vanadium | (Dissolved) |
| Vinyl acetate | 108-05-4 |
| Vinyl chloride; Chloroethene | 75-01-4 |
| Xylene (Total) | See note 7 |
| Zinc | (Total) |
| Zinc | (Dissolved) |

(b) The following metals (dissolved and total):

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name¹</u> | <u>CAS RN²</u> |
|--------------------------------|---------------------------|
| (1) Antimony | (Total) |
| (2) Antimony | (Dissolved) |
| (3) Arsenic | (Total) |
| (4) Arsenic | (Dissolved) |
| (5) Barium | (Total) |
| (6) Barium | (Dissolved) |
| (7) Beryllium | (Total) |
| (8) Beryllium | (Dissolved) |
| (9) Cadmium | (Total) |
| (10) Cadmium | (Dissolved) |
| (11) Chromium | (Total) |
| (12) Chromium | (Dissolved) |
| (13) Cobalt | (Total) |
| (14) Cobalt | (Dissolved) |
| (15) Copper | (Total) |
| (16) Copper | (Dissolved) |
| (17) Lead | (Total) |
| (18) Lead | (Dissolved) |
| (19) Lithium | (Total) |
| (20) Lithium | (Dissolved) |
| (21) Mercury | (Total) |
| (22) Mercury | (Dissolved) |
| (23) Nickel | (Total) |
| (24) Nickel | (Dissolved) |
| (25) Selenium | (Total) |
| (26) Selenium | (Dissolved) |
| (27) Silver | (Total) |
| (28) Silver | (Dissolved) |
| (29) Thallium | (Total) |
| (30) Thallium | (Dissolved) |
| (31) Tin | (Total) |
| (32) Tin | (Dissolved) |
| (33) Vanadium | (Total) |
| (34) Vanadium | (Dissolved) |
| (35) Zinc | (Total) |

(36) Zinc (Dissolved)

(c) The following inorganics:

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name¹</u> | <u>CAS RN²</u> |
|--------------------------------|---------------------------|
| (1) Cyanide | 57-12-5 |
| (2) Fluoride | |
| (3) Nitrate (as N) | |
| (4) Sulfide | 18496-25-8 |

(d) The following volatile organic compounds:

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name¹</u> | <u>CAS RN²</u> |
|--|---------------------------|
| (1) Acetone | 67-64-1 |
| (2) Acetonitrile; Methyl cyanide | 75-05-8 |
| (3) Acrolein | 107-02-8 |
| (4) Acrylonitrile | 107-13-1 |
| (5) Allyl chloride | 107-05-1 |
| (6) Benzene | 71-43-2 |
| (7) Bromochloromethane; Chlorobromomethane | 74-97-5 |
| (8) Bromodichloromethane; Dichlorobromomethane | 75-27-4 |
| (9) Bromoform; Tribromomethane | 75-25-2 |
| (10) Carbon disulfide | 75-15-0 |
| (11) Carbon tetrachloride | 56-23-5 |
| (12) Chlorobenzene | 108-90-7 |
| (13) Chloroethane; Ethyl chloride | 75-00-3 |
| (14) Chloroform; Trichloromethane | 67-66-3 |
| (15) Chloroprene | 126-99-8 |
| (16) Dibromochloromethane; Chlorodibromomethane | 124-48-1 |
| (17) 1,2-Dibromo-3-chloropropane; DBCP | 96-12-8 |
| (18) 1,2-Dibromoethane; Ethylene dibromide; EDB | 106-93-4 |
| (19) o-Dichlorobenzene; 1,2-Dichlorobenzene | 95-50-1 |
| (20) m-Dichlorobenzene; 1,3-Dichlorobenzene | 541-73-1 |
| (21) p-Dichlorobenzene; 1,4-Dichlorobenzene | 106-46-7 |
| (22) trans-1,4-Dichloro-2-butene | 110-57-6 |
| (23) Dichlorodifluoromethane; CFC 12 | 75-71-8 |
| (24) 1,1-Dichloroethane; Ethylidene chloride | 75-34-3 |
| (25) 1,2-Dichloroethane; Ethylene dichloride | 107-06-2 |
| (26) 1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride | 75-35-4 |
| (27) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene | 156-59-2 |
| (28) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene | 156-60-5 |
| (29) 1,2-Dichloropropane; Propylene dichloride | 78-87-5 |
| (30) 1,3-Dichloropropane; Trimethylene dichloride | 142-28-9 |
| (31) 2,2-Dichloropropane; Isopropylidene chloride | 594-20-7 |
| (32) 1,1-Dichloropropene | 563-58-6 |
| (33) cis-1,3-Dichloropropene | 10061-01-5 |
| (34) trans-1,3-Dichloropropene | 10061-02-6 |
| (35) Ethylbenzene | 100-41-4 |
| (36) 2-Hexanone; methyl butyl ketone | 591-78-6 |
| (37) Isobutyl alcohol | 78-83-1 |

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|--|------------|
| (38) Methacrylonitrile | 126-98-7 |
| (39) Methyl bromide; Bromomethane | 74-83-9 |
| (40) Methyl chloride; Chloromethane | 74-87-3 |
| (41) Methyl ethyl ketone; MEK; 2-Butanone | 78-93-3 |
| (42) Methyl iodide; Iodomethane | 74-88-4 |
| (43) Methyl methacrylate | 80-62-6 |
| (44) Methyl parathion; Parathion methyl | 298-00-0 |
| (45) 4-Methyl-2-pentanone; Methyl isobutyl ketone | 108-10-1 |
| (46) Methylene bromide; Dibromomethane | 74-95-3 |
| (47) Methylene chloride; Dichloromethane | 75-09-2 |
| (48) Styrene | 100-42-5 |
| (49) 1,1,1,2-Tetrachloroethane | 630-20-6 |
| (50) 1,1,2,2-Tetrachloroethane | 79-34-5 |
| (51) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene | 127-18-4 |
| (52) Toluene | 108-88-3 |
| (53) 1,1,1-Trichloroethane; Methylchloroform | 71-55-6 |
| (54) 1,1,2-Trichloroethane | 79-00-5 |
| (55) Trichloroethylene; Trichloroethene | 79-01-6 |
| (56) Trichlorofluoromethane; CFC-11 | 75-69-4 |
| (57) 1,2,3-Trichloropropane | 96-18-4 |
| (58) Vinyl acetate | 108-05-4 |
| (59) Vinyl chloride; Chloroethene | 75-01-4 |
| (60) Xylene (Total) | See note 3 |

(e) The following semi-volatile organic compounds:

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name¹</u> | <u>CAS RN²</u> |
|--|---------------------------|
| (1) Acenaphthylene | 208-96-8 |
| (2) Acenaphthene | 83-32-9 |
| (3) Acetophenone | 98-86-2 |
| (4) 2-Acetylaminofluorene; 2-AAF | 53-96-3 |
| (5) 4-Aminobiphenyl | 92-67-1 |
| (6) Anthracene | 120-12-7 |
| (7) Benzo[a]anthracene; Benzanthracene | 56-55-3 |
| (8) Benzo[b]fluoranthene | 205-99-2 |
| (9) Benzo[k]fluoranthene | 207-08-9 |
| (10) Benzo[ghi]perylene | 191-24-2 |
| (11) Benzo[a]pyrene | 50-32-8 |
| (12) Benzyl alcohol | 100-51-6 |
| (13) Bis(2-chloroethoxy) methane | 111-91-1 |
| (14) Bis(2-chloroethyl) ether; Dichloroethyl ether | 111-44-4 |
| (15) Bis(2-chloro-1-methylethyl) ether; 2,2-Dichlorodiisopropyl ether; DCIP (See note 4) | 108-60-1 |
| (16) Bis(2-ethylhexyl) phthalate | 117-81-7 |
| (17) 4-Bromophenyl phenyl ether | 101-55-3 |
| (18) Butyl benzyl phthalate; Benzyl butyl phthalate | 85-68-7 |
| (19) p-Chloroaniline | 106-47-8 |
| (20) Chlorobenzilate | 510-15-6 |
| (21) p-Chloro-m-cresol; 4-Chloro-3-methylphenol | 59-50-7 |
| (22) 2-Chloronaphthalene | 91-58-7 |
| (23) 2-Chlorophenol | 95-57-8 |
| (24) 4-Chlorophenyl phenyl ether | 7005-72-3 |

| | |
|---|-----------|
| (25) Chrysene | 218-01-9 |
| (26) m-Cresol; 3-Methylphenol | 108-39-4 |
| (27) o-Cresol; 2-Methylphenol | 95-48-7 |
| (28) p-Cresol; 4-Methylphenol | 106-44-5 |
| (29) Diallate | 2303-16-4 |
| (30) Dibenz[a,h]anthracene | 53-70-3 |
| (31) Dibenzofuran | 132-64-9 |
| (32) Di-n-butyl phthalate | 84-74-2 |
| (33) 3,3'-Dichlorobenzidine | 91-94-1 |
| (34) 2,4-Dichlorophenol | 120-83-2 |
| (35) 2,6-Dichlorophenol | 87-65-0 |
| (36) Di(2-ethylhexyl)adipate; DOA | 103-23-1 |
| (37) Diethyl phthalate | 84-66-2 |
| (38) p-(Dimethylamino)azobenzene | 60-11-7 |
| (39) 7,12-Dimethylbenz[a]anthracene | 57-97-6 |
| (40) 3,3'-Dimethylbenzidine | 119-93-7 |
| (41) 2,4-Dimethylphenol; m-Xylenol | 105-67-9 |
| (42) Dimethyl phthalate | 131-11-3 |
| (43) m-Dinitrobenzene | 99-65-0 |
| (44) 4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol | 534-52-1 |
| (45) 2,4-Dinitrophenol | 51-28-5 |
| (46) 2,4-Dinitrotoluene | 121-14-2 |
| (47) 2,6-Dinitrotoluene | 606-20-2 |
| (48) Di-n-octyl phthalate | 117-84-0 |
| (49) Diphenylamine | 122-39-4 |
| (50) Ethyl methacrylate | 97-63-2 |
| (51) Famphur | 52-85-7 |
| (52) Fluoranthene | 206-44-0 |
| (53) Fluorene | 86-73-7 |
| (54) Hexachlorobenzene | 118-74-1 |
| (55) Hexachlorobutadiene | 87-68-3 |
| (56) Hexachlorocyclopentadiene | 77-47-4 |
| (57) Hexachloroethane | 67-72-1 |
| (58) Hexachloropropene | 1888-71-7 |
| (59) Indeno(1,2,3-cd)pyrene | 193-39-5 |
| (60) Isodrin | 465-73-6 |
| (61) Isophorone | 78-59-1 |
| (62) Isosafrole | 120-58-1 |
| (63) Kepone | 143-50-0 |
| (64) Methapyrilene | 91-80-5 |
| (65) 3-Methylcholanthrene | 56-49-5 |
| (66) Methyl methanesulfonate | 66-27-3 |
| (67) 2-Methylnaphthalene | 91-57-6 |
| (68) Naphthalene | 91-20-3 |
| (69) 1,4-Naphthoquinone | 130-15-4 |
| (70) 1-Naphthylamine | 134-32-7 |
| (71) 2-Naphthylamine | 91-59-8 |
| (72) o-Nitroaniline; 2-Nitroaniline | 88-74-4 |
| (73) m-Nitroaniline; 3-Nitroaniline | 99-09-2 |
| (74) p-Nitroaniline; 4-Nitroaniline | 100-01-6 |
| (75) Nitrobenzene | 98-95-3 |
| (76) o-Nitrophenol; 2-Nitrophenol | 88-75-5 |

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|--|------------|
| (77) p-Nitrophenol; 4-Nitrophenol | 100-02-7 |
| (78) N-Nitroso-di-n-butylamine | 924-16-3 |
| (79) N-Nitrosodiethylamine | 55-18-5 |
| (80) N-Nitrosodimethylamine | 62-75-9 |
| (81) N-Nitrosodiphenylamine | 86-30-6 |
| (82) N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine | 621-64-7 |
| (83) N-Nitrosomethylethylamine | 10595-95-6 |
| (84) N-Nitrosopiperidine | 100-75-4 |
| (85) N-Nitrosopyrrolidine | 930-55-2 |
| (86) 5-Nitro-o-toluidine | 99-55-8 |
| (87) Pentachlorobenzene | 608-93-5 |
| (88) Pentachloronitrobenzene | 82-68-8 |
| (89) Pentachlorophenol | 87-86-5 |
| (90) Phenacetin | 62-44-2 |
| (91) Phenanthrene | 85-01-8 |
| (92) Phenol | 108-95-2 |
| (93) p-Phenylenediamine | 106-50-3 |
| (94) Pronamide | 23950-58-5 |
| (95) Propionitrile; Ethyl cyanide | 107-12-0 |
| (96) Pyrene | 129-00-0 |
| (97) Safrole | 94-59-7 |
| (98) 1,2,4,5-Tetrachlorobenzene | 95-94-3 |
| (99) 2,3,4,6-Tetrachlorophenol | 58-90-2 |
| (100) o-Toluidine | 95-53-4 |
| (101) 1,2,4-Trichlorobenzene | 120-82-1 |
| (102) 2,4,5-Trichlorophenol | 95-95-4 |
| (103) 2,4,6-Trichlorophenol | 88-06-2 |
| (104) 0,0,0-Triethyl phosphorothioate | 126-68-1 |
| (105) sym-Trinitrobenzene | 99-35-4 |

(f) The following pesticides, herbicides, and PCBs:

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name¹</u> | <u>CAS RN²</u> |
|--|---------------------------|
| (1) Alachlor | 15972-60-8 |
| (2) Aldrin | 309-00-2 |
| (3) Atrazine | 1912-24-9 |
| (4) alpha-BHC | 319-84-6 |
| (5) beta-BHC | 319-85-7 |
| (6) delta-BHC | 319-86-8 |
| (7) gamma-BHC; Lindane | 58-89-9 |
| (8) Carbofuran | 1563-66-2 |
| (9) Chlordane | See note 5 |
| (10) Dalapon | 75-99-0 |
| (11) 2,4-D; 2,4-Dichlorophenoxyacetic acid | 94-75-7 |
| (12) 4,4'-DDD | 72-54-8 |
| (13) 4,4'-DDE | 72-55-9 |
| (14) 4,4'-DDT | 50-29-3 |
| (15) Dieldrin | 60-57-1 |
| (16) 0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin | 297-97-2 |
| (17) Dimethoate | 60-51-5 |
| (18) Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol | 88-85-7 |

| | |
|---|------------|
| (19) Diquat | 85-00-7 |
| (20) Disulfoton | 298-04-4 |
| (21) Endosulfan I | 959-98-8 |
| (22) Endosulfan II | 33213-65-9 |
| (23) Endosulfan sulfate | 1031-07-8 |
| (24) Endothall | 145-73-3 |
| (25) Endrin | 72-20-8 |
| (26) Endrin aldehyde | 7421-93-4 |
| (27) Ethyl methanesulfonate | 62-50-0 |
| (28) Glyphosate | 1071-83-6 |
| (29) Heptachlor | 76-44-8 |
| (30) Heptachlor epoxide | 1024-57-3 |
| (31) Methoxychlor | 72-43-5 |
| (32) Oxamyl | 23135-22-0 |
| (33) Parathion | 56-38-2 |
| (34) Phorate | 298-02-2 |
| (35) Picloram | 1918-02-1 |
| (36) Polychlorinated biphenyls; PCBs; Aroclors | See note 6 |
| (37) Silvex; 2,4,5-TP | 93-72-1 |
| (38) Simazine | 122-34-9 |
| (39) 2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid | 93-76-5 |
| (40) Toxaphene | See note 7 |

(g) The following miscellaneous constituents:

TABLE 2
Constituents for Assessment Monitoring

| <u>Common Name</u> ¹ | <u>CAS RN</u> ² |
|---|----------------------------|
| (1) Asbestos | 132207-33-1 |
| (2) Combined beta/photon emitters | |
| (3) Gross alpha particle activity (including radium 226, but excluding radon and uranium) | |
| (4) Radium 226 and 228 (combined) | |
| (5) 2,3,7,8 -TCDD (Dioxin) | 1746-01-6 |

(h) The following notes apply to subsections (b) through (f):

¹Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

²Chemical Abstracts Service registry number. Where “Total” is entered, all species in the ground water that contain this element are included. Where “Dissolved” is entered, all species in a filtered sample of the ground water that contain this element are included.

³**Xylene (total). This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).**

^{3,4}This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2'-oxybis[2-chloro- (CAS RN 39638-32-9).

^{4,5}Chlordane. This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6).

^{5,6}Polychlorinated biphenyls (CAS RN 1336-36-3). This category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5).

^{6,7}Toxaphene. This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), that is, chlorinated camphene.

⁷Xylene (total). This entry includes o-xylene (CAS RN 96-47-6); m-xylene (CAS RN 108-38-3); p-xylene (CAS RN 106-42-3); and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).
(Solid Waste Management Board; 329 IAC 10-21-16; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1880)

SECTION 84. 329 IAC 10-22-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-2 Closure plan

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 2. (a) The owner, operator, or permittee of an MSWLF shall prepare a written closure plan. The plan must be submitted with the permit application in accordance with 329 IAC 10-11 and be approved by the commissioner as part of the permit. The approved closure plan becomes a condition of the permit upon approval.

(b) The owner, operator, or permittee of ~~MSWLFs~~ **an MSWLF** permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, that:

(1) closed on or before January 1, 1998, must close under the MSWLF's existing approved closure plans; or

(2) intend to close after January 1, 1998, must:

(A) revise closure plans to meet the requirements of subsection (c); and

(B) submit the revised plans to the commissioner for approval within six (6) months after the effective date of this article or the anniversary date of the approved closure plans, whichever is earlier.

(c) The closure plan must identify the steps necessary to completely close the MSWLF at any point during its active life in accordance with section 1 of this rule. The plan must be certified by a registered professional engineer. The closure plan must include the following:

(1) A description of the steps that will be used to partially close, if applicable, and finally close the MSWLF in accordance with section 1 of this rule.

(2) A listing of labor, materials, and testing necessary to close the MSWLF.

(3) An estimate of the expected year of closure and a schedule for final closure. The schedule must include the following:

(A) The total time required to close the MSWLF.

(B) The time required for completion of intervening closure activities.

(4) An estimate of the maximum inventory of wastes that will be on-site over the active life of the MSWLF.

(5) An estimate of the cost per acre of providing final cover and vegetation. Such cost must reflect cost necessary to close the MSWLF by the third party as required by the approved plan, but must not be less than:

(A) ~~twenty~~ **twenty-one** thousand dollars (~~\$20,000~~) (**\$21,000**) per acre to close MSWLF units that are constructed with only a soil liner; and

(B) ~~seventy-five~~ **seventy-eight** thousand **seven hundred fifty** dollars (~~\$75,000~~) (**\$78,750**) per acre for MSWLF units that are constructed with a composite bottom liner system.

(C) Existing closure plan cost estimates approved before the latest effective date of this section are not required to be revised by the owner, operator, or permittee to meet the minimum cost estimates given in clauses (A) and (B).

(D) The minimum cost estimates given in clauses (A) and (B) are valid for one (1) year after the latest effective date of this section.

(E) If an application is submitted for a new MSWLF or a major modification one (1) year after the latest effective date of this section, the owner, operator, or permittee must adjust these cost estimates for inflation as described in 329 IAC 10-39-2(c)(1).

(6) **For major modifications**, the closure cost estimate must include a ten percent (10%) contingency cost on the total closure cost of the MSWLF.

(7) If the owner, operator, or permittee of an MSWLF utilizes the ~~incremental closure trust fund option or funds the letter of credit on an annual basis; standard~~, as contained in ~~329 IAC 10-39~~ **329 IAC 10-39-2(b)(3)(B)**, then for each yearly period following the beginning of operation of the MSWLF, the closure plan must specify the

maximum area of the MSWLF into which municipal solid waste will have been deposited through that year of the MSWLF's life and must delineate such areas on the copy of the facility's final contour map. The closure plan must list closure cost estimates for each year of the anticipated life of the facility equal to the costs specified by subdivisions (5) and (6).

(8) An estimate of the yearly maintenance costs for a dike or dikes required under 329 IAC 10-16-2.

(9) A construction quality assurance and construction quality control plan for the construction and installation of the final cover system as required by this rule.

(10) A description of the final cover, designed in accordance with this rule, and the methods and procedures to be used to install the cover.

(11) An estimate of the largest area of the MSWLF ever requiring a final cover as required under this rule at any time during the active life.

(12) If property is used to fulfill or reduce the cost of closure funding, the property must not be sold, relinquished, or used for any other purpose. If the property is proposed to be sold, relinquished, or used for any other purpose, the owner, operator, or permittee shall complete the following requirements:

(A) The closure plan must be updated under this section and submitted to the commissioner.

(B) The closure financial responsibility must be updated under 329 IAC 10-39 and submitted to the commissioner.

(C) The owner, operator, or permittee shall receive approval from the commissioner for the requirements under clauses (A) and (B) prior to selling, relinquishing, or using the property for any other purpose.

(Solid Waste Management Board; 329 IAC 10-22-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1882; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3859)

SECTION 85. 329 IAC 10-22-3 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-3 Partial closure certification

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 3. (a) The owner, operator, or permittee of an MSWLF may submit partial closure certification for portions of the MSWLF that have received final cover and are graded and have established vegetation in accordance with the applicable provisions of this rule, 329 IAC 10-20, and the approved closure plan prior to closure of the MSWLF.

(b) The owner, operator, or permittee of an MSWLF shall submit to the commissioner a certification signed by the owner, operator, or permittee and an independent registered professional engineer that specifically identifies the closed areas and that specifies that the partial closure has been accomplished in accordance with the approved closure plan and this article. Certification of partial closure must not be made for an area until the final cover has been completely provided for that area and vegetation has been established.

(c) The partial closure certification will be deemed adequate unless, within ~~one hundred fifty (150)~~ **ninety (90)** days of receipt of the partial closure certification, the commissioner issues a notice of deficiency of closure, including action necessary to correct the deficiency.

(d) A partial closure for leachate generation rate, as required by 10-23-3(c)(5)(B), may be granted if the owner, operator, or permittee of an MSWLF provides actual leachate generation rate data of an area for at least a two (2) years duration after final cover is installed and certified.

(e) Fifteen (15) days prior to initiation of partial closure of a certain area, the owner, operator, or permittee of an MSWLF shall notify the commissioner in writing that they will be constructing a final cover.
(Solid Waste Management Board; 329 IAC 10-22-3; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1883; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2813; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3860)

SECTION 86. 329 IAC 10-22-5 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-5 Completion of closure and final cover

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 5. (a) The owner, operator, or permittee of an MSWLF shall complete closure activities and complete application of final cover within one hundred eighty (180) days on ~~an~~ **any** area in the MSWLF **as approved in the closure plan** that:

- (1) has received the area's final waste volume; or
- (2) is filled to the area's final approved waste elevation.

(b) Upon application for an extension by the owner, operator, or permittee, a one (1) time extension of the closure period may be granted by the commissioner if the owner, operator, or permittee demonstrates that closure will, by necessity, take longer than one hundred eighty (180) days and the owner, operator, or permittee has taken and will continue to take all steps to prevent threats to human health ~~and or~~ the environment. The extension of the closure period must not be longer than three hundred sixty-five (365) days immediately following the one hundred eighty (180) days of the original closure period. (*Solid Waste Management Board; 329 IAC 10-22-5; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1883; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2813; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3860*)

SECTION 87. 329 IAC 10-22-6 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-6 Final cover requirements for new MSWLF units or existing MSWLF units that have a composite bottom liner and a leachate collection system

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 6. (a) The owner, operator, or permittee of an MSWLF containing new MSWLF units or existing MSWLF units that have a composite bottom liner system and a leachate collection system shall install a final cover system as defined in subsection (b) within one hundred eighty (180) days on any area in the MSWLF units **as approved in the closure plan** that:

- (1) has received the final waste volume; or
 - (2) is filled to the approved final waste elevation;
- or as approved under section 5(b) of this rule.

(b) Final cover systems for new MSWLF units or existing MSWLF units that have a composite bottom liner system must consist of the following, starting from the top of the municipal solid waste mass (waste placement) to the top of the final cover system:

- (1) A methane gas venting layer must be installed directly over the waste. This layer must consist of twelve (12) inches of drainage layer material that has a hydraulic conductivity of 1×10^{-3} centimeters per second or more. Geosynthetic material (geotextile, geonet, both, or other material as approved by the commissioner) may be substituted for drainage layer material in the gas venting layer if equivalent or better performance is demonstrated. The owner, operator, or permittee must demonstrate that transmissivity and permitivity provide for the anticipated gas discharge quantity.
- (2) A soil barrier layer must be installed over the methane gas venting layer. The soil barrier must consist of a lower component of twelve (12) inches of structural fill and an upper component of twelve (12) inches of compacted earthen material with a hydraulic conductivity of 1×10^{-6} centimeters per second or less. The upper component must be soil of Unified Soil Classification ML, CL, MH, CH, or OH. Other suitable material approved by the commissioner may be used if it provides an adequate level of protection to human health ~~and or~~ the environment. Grain size, Atterberg limits, and hydraulic conductivity tests as approved by the commissioner must be performed to confirm the quality of the final cover.
- (3) A minimum thirty (30) mil geomembrane top liner must be installed directly in contact with the upper portion of the soil barrier layer. If the geomembrane is composed of high density polyethylene (HDPE), then it must be at least sixty (60) mil thick. The commissioner may require an increase in the thickness of the geomembrane if it is

determined that increased thickness is necessary to prevent failure under stresses caused by construction equipment and waste settlement during the post-closure care period.

(4) A drainage layer must be installed over the geomembrane liner. The drainage layer must consist of twelve (12) inches of material that has a hydraulic conductivity of 1×10^{-3} centimeters per second or more. If geosynthetic materials are used as a drainage layer, the effective transmissivity must be equivalent to twelve (12) inches of drainage layer with a hydraulic conductivity of 1×10^{-3} centimeters per second or more.

(5) A top protective soil layer must overlay the drainage layer. This layer must consist of at least eighteen (18) inches of earthen material. If geosynthetic materials are used as a drainage layer, at a minimum, thirty (30) inches of earthen material must be placed on top of the geosynthetic materials. The protective soil layer material must be designed to not clog the drainage layer.

(6) A vegetative layer must overlay the top protective layer. This layer must consist of at least six (6) inches of earthen material capable of sustaining vegetation. In any case, a total thickness of earthen material over the geomembrane top liner must not be less than thirty-six (36) inches.

(7) The maximum projected erosion rate of the final cover must be no more than five (5) tons per acre per year.

(8) The final cover must have a slope no less than four percent (4%) or two and twenty-nine hundredths (2.29) degrees and no greater than thirty-three percent (33%) or eighteen and twenty-six hundredths (18.26) degrees.

(c) The requirement in subsection (b)(1) may be waived by the commissioner if the following apply:

(1) The MSWLF has a permitted active gas recovery and extraction system in place.

(2) The permitted active gas extraction system at the MSWLF extracts or recovers at least sixty percent (60%) of the total volume of landfill gas produced or generated by the MSWLF.

(Solid Waste Management Board; 329 IAC 10-22-6; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1883; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3861)

SECTION 88. 329 IAC 10-22-7 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-7 Final cover requirements for existing MSWLF units constructed without a composite bottom liner

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 7. (a) The owner, operator, or permittee of an MSWLF containing existing MSWLF units constructed without a composite bottom liner shall install a final cover system as appropriate to subsection (b) or (c) within one hundred eighty (180) days on any area in the MSWLF units **as approved in the closure plan** that:

(1) has received the final waste volume; or

(2) is filled to the approved final waste elevation;

unless otherwise approved by the commissioner or as approved under section 5(b) of this rule.

(b) Unless otherwise approved by the commissioner, final cover systems for existing MSWLF units constructed with a soil bottom liner and a leachate collection system that were permitted under 329 IAC 2, which was repealed in 1996, and closing after January 1, 1998, must consist of the following:

(1) On slopes equal to or less than fifteen percent (15%) or eight and fifty-three hundredths (8.53) degrees, the final cover must be constructed as follows:

(A) A twenty-four (24) inch barrier layer of soil of the Unified Soil Classification ML, CL, MH, CH, or OH directly over the waste. Other suitable material approved by the commissioner may be used if it provides an adequate level of protection to human health ~~and~~ **or** the environment. The soil must be compacted to achieve a hydraulic conductivity equal to 1×10^{-7} centimeters per second or less. Grain size, Atterberg limits, and hydraulic conductivity tests as approved by the commissioner or as required by this article must be performed to confirm the quality of the final cover.

(B) A vegetative layer must overlay the top protective layer. This layer must consist of at least six (6) inches of earthen material capable of sustaining vegetation.

(2) On slopes greater than fifteen percent (15%) or eight and fifty-three hundredths (8.53) degrees, the final cover must be constructed as follows:

(A) A twenty-four (24) inch barrier layer of soil of the Unified Soil Classification ML, CL, MH, CH, or OH directly over the waste. Other suitable material approved by the commissioner may be used if it provides an adequate level of protection to human health ~~and~~ **or** the environment. The soil must be compacted to achieve a hydraulic conductivity equal to 1×10^{-6} centimeters per second or less. Grain size, Atterberg limits, and hydraulic conductivity tests as approved by the commissioner or as required by this article must be performed to confirm the quality of the final cover.

(B) A vegetative layer consisting of at least six (6) inches of earthen material capable of sustaining vegetation must overlay the barrier layer.

(C) An increase in the thickness of the layers required in this subdivision may be required by the facility permit or the commissioner.

(3) The maximum projected erosion rate of the final cover must be no more than five (5) tons per acre per year.

(4) The final cover must have a slope:

(A) no less than four percent (4%) or two and twenty-nine hundredths (2.29) degrees; and

(B) no greater than thirty-three percent (33%) or eighteen and twenty-six hundredths (18.26) degrees.

(c) Unless otherwise approved by the commissioner, final cover systems for existing MSWLF units constructed without a soil bottom liner or a leachate collection system that were permitted under 329 IAC 1.5, which was repealed in 1989, or 329 IAC 2, which was repealed in 1996, and closing after January 1, 1998, must consist of the following:

(1) On slopes equal to or less than fifteen percent (15%) or eight and fifty-three hundredths (8.53) degrees, the final cover not including benches, swales, and drainage features, must be constructed as specified in section 6(b)(1) through 6(b)(7) of this rule.

(2) On slopes greater than fifteen percent (15%) or eight and fifty-three hundredths (8.53) degrees, the final cover must be constructed as specified in subsection (b)(2).

(3) The maximum projected erosion rate of the final cover must be no more than five (5) tons per acre per year.

(4) The final cover must have a slope:

(A) not less than four percent (4%) or two and twenty-nine hundredths (2.29) degrees; and

(B) not greater than thirty-three percent (33%) or eighteen and twenty-six hundredths (18.26) degrees.

(Solid Waste Management Board; 329 IAC 10-22-7; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1884; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2813; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3861)

SECTION 89. 329 IAC 10-22-8 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-22-8 Final closure certification

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 8. (a) Following closure of an MSWLF unit at an MSWLF, the owner, operator, or permittee shall submit to the commissioner a certification signed by the owner, operator, or permittee and an independent registered professional engineer that the partial closure involving an MSWLF unit or final closure of the entire MSWLF has been completed in accordance with the approved closure plan. Certification of closure must not be made for an area until the final cover has been completed and vegetation has been established.

(b) Following final closure of all MSWLF units at an MSWLF, the owner, operator, or permittee shall record with the county land recording authority, a notation on the deed to the MSWLF property, or some other instrument normally examined during title search, and notify the commissioner in writing that the notation has been recorded. The notation on the deed must in perpetuity notify any potential purchaser of the property that the land has been used as a MSWLF. At a minimum, the recording must contain the following:

(1) The general types and location of waste.

- (2) The depth of fill.
- (3) A plot plan, with surface contours at intervals of two (2) feet, which must indicate:
 - (A) surface water run-off directions;
 - (B) surface water diversion structures after completion of the operation; and
 - (C) final grade contours.
- (4) A statement that no construction, installation of **ground water monitoring** wells, pipes, conduits, or septic systems, or any other excavation will be done on the property without approval of the commissioner.

(c) The final closure certification will be deemed adequate unless within ~~one hundred fifty (150)~~ **ninety (90)** days of receipt of the final closure certification the commissioner issues a notice of deficiency of closure, including action necessary to correct the deficiency. (*Solid Waste Management Board; 329 IAC 10-22-8; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1885; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2814; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3862*)

SECTION 90. 329 IAC 10-23-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-23-2 Post-closure duties

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 2. (a) The owner, operator, or permittee of an MSWLF has the following duties after closure:

- (1) Post-closure activities must be performed in accordance with the approved post-closure plan as specified in section 3 of this rule.
- (2) Inspection of the MSWLF at least twice per year with a written report on the condition of the MSWLF to be submitted to the commissioner.
- (3) Maintenance of the integrity of the geomembrane cap, if applicable, and the minimum thickness of final cover and vegetation as required by 329 IAC 10-20 and 329 IAC 10-22 or as approved by the commissioner.
- (4) Maintenance of the final contours of the MSWLF in accordance with the applicable standards of 329 IAC 10-20 and 329 IAC 10-22 and, at a minimum, to provide that no ponding of water occurs on filled areas.
- (5) Control of any vegetation on vehicular access ways to monitoring wells as required by 329 IAC 10-20-2(d).
- (6) Control of vegetation at the MSWLF as necessary to enable determination of the need for slope and cover maintenance and leachate outbreak abatement.
- (7) Maintenance of access control and benchmarks at the MSWLF.
- (8) Maintenance and monitoring of the dike or dikes required under 329 IAC 10-16-2.
- (9) If ownership of the land or MSWLF changes at any time during the post-closure period, the new owner must have a written agreement with the past owner which states the new owner will monitor and maintain the dike or dikes required by 329 IAC 10-16-2 during the subsequent post-closure period.
- (10) Maintenance and monitoring of leachate collection and treatment systems and methane control systems.
- (11) Control of any leachate or gas generated at the MSWLF as required by 329 IAC 10-20.
- (12) Erosion and sediment control measures must be instituted to comply with 329 IAC 10-20-12.
- (13) An MSWLF that closes:
 - (A) prior to the effective date required by 40 CFR 258 for the MSWLF units' ground water monitoring, must continue to monitor ground water as required by the rules in force at the time the facility entered into post-closure;
 - (B) on or after the effective date required by 40 CFR 258 for the MSWLF units' ground water monitoring, must monitor ground water after the effective date of this article as required by 329 IAC 10-21; or
 - (C) under any other article is required to follow the:
 - (i) post-closure plan as required by the rules in force at the time the MSWLF entered into post-closure; or
 - (ii) rules in force at the time the MSWLF entered into post-closure if the rules in force do not require a post-closure plan.
- (14) In addition to the corrective action program required by the rules under which the facility closed, the commissioner may require performance of corrective action measures within 329 IAC 10-21-13 if the MSWLF:
 - (A) closed prior to the effective date of this article;

(B) is monitoring ground water in accordance with the rules in force at the time the MSWLF entered into post-closure; and

(C) finds a corrective action program is applicable under the rules in force at the time the MSWLF entered post-closure.

(b) Post-closure requirements imposed by this section must be followed for a period of thirty (30) years after the following applicable date:

(1) If the final closure certification is deemed adequate, the date the final closure certification is received by the commissioner in accordance with 329 IAC 10-22-8(a).

(2) If the final closure certification is deemed inadequate, the date the commissioner approves any actions necessary to correct items listed in a notice of deficiency of closure certification under 329 IAC 10-22-8(c).

(c) The length of the post-closure care period may be increased by the commissioner if the commissioner determines that the lengthened period is necessary to protect human health ~~and~~ **or** the environment. The standards to determine an increased post-closure care period include, but are not limited to:

(1) stability of final cover;

(2) maintenance problems with an MSWLF certified as closed;

(3) evidence of ground water contamination;

(4) quantity of gas produced and managed; or

(5) reliability of ground water monitoring well system.

(Solid Waste Management Board; 329 IAC 10-23-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1886; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2815; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3863)

SECTION 91. 329 IAC 10-23-3 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-23-3 Post-closure plan

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 3. (a) The owner, operator, or permittee of an MSWLF shall have a written post-closure plan. The post-closure plan must be submitted with the permit application in accordance with 329 IAC 10-11 and be approved by the commissioner. The approved post-closure plan must become a condition of the permit. If the permit expires or is revoked, the post-closure plan remains effective and enforceable during the post-closure period. If the plan is determined to be unacceptable, the commissioner shall identify the items needed to make it complete.

(b) The owner, operator, or permittee of existing MSWLFs shall revise and submit post-closure plans meeting the requirements of this rule within six (6) months after the effective date of this article or the anniversary date of the approved post-closure plan, whichever is earlier.

(c) The post-closure plan must identify the activities that will be carried on after closure under section 2 of this rule and must include at least the following:

(1) A description of the planned ground water monitoring activities and the frequency at which they will be performed.

(2) A description of the planned maintenance activities and the frequency at which they will be performed.

(3) A description of the planned uses of the property during the post-closure period. Post-closure use of the property must not disturb the integrity of the final cover, liner, or any other component of the containment system, or the function of the monitoring system, unless necessary to comply with this article. The commissioner may approve other disturbances if the owner, operator, or permittee demonstrates that disturbance of the final cover, liner, or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

(4) The name, address, and telephone number of the owner, operator, or permittee with responsibility for maintaining the site after closure whom the commissioner may contact about the MSWLF during the post-closure period.

(5) A post-closure cost estimate in accordance with 329 IAC 10-39. Post-closure costs must be calculated based on the cost necessary for the work to be performed by a third party for thirty (30) years of the post-closure period and must include the following:

(A) For post-closure maintenance of final cover and vegetation, the amount per acre must be ten percent (10%) of the cost calculated under 329 IAC 10-22-2(c)(5) multiplied by the total acreage of the site permitted for filling.

(B) At a minimum, the amount of funds necessary for leachate treatment and disposal must be based on the following gallons per acre per day over the thirty (30) year post-closure period:

| Year | Gallons Per Acre Per Day (GPAD) |
|-------|------------------------------------|
| 1-5 | 150 |
| 6-10 | 80 |
| 11-15 | 50 |
| 16-20 | 30 |
| 21-25 | 20 |
| 26-30 | 10 |

The commissioner may increase or decrease this amount of funding if it is determined that, based on a site-specific basis, more or less funds are necessary. **A partial closure for leachate generation rate, as required by 10-22-3(d), may be granted, if the owner, operator, or permittee of an MSWLF provides actual leachate generation rate data of an area for at least a two (2) years duration after final cover is installed and certified.**

(C) At a minimum, the amount of funds necessary to provide for post-closure activities must include funds for the following:

(i) Ground water monitoring and well maintenance, **including piezometers when applicable.**

(ii) Methane monitoring and maintenance.

(iii) Maintenance of drainage and erosion control system.

(iv) Maintenance of leachate collection system.

(v) Maintenance of access control.

(vi) Control of vegetation.

(vii) Maintenance of the dike or dikes if required under 329 IAC 10-16-2.

(6) The post-closure cost estimate must include a twenty-five percent (25%) contingency cost based on total post-closure cost.

(7) If the property is used to fulfill or reduce the cost of post-closure funding, the property must not be sold, relinquished, or used for any other purpose. If the property is proposed to be sold, relinquished, or used for any other purpose, the owner, operator, or permittee shall complete the following requirements:

(A) The post-closure plan must be updated under this section and submitted to the commissioner.

(B) The post-closure financial responsibility must be updated under 329 IAC 10-39 and submitted to the commissioner.

(C) The owner, operator, or permittee shall receive approval from the commissioner for the requirements under clauses (A) and (B) prior to selling, relinquishing, or using the property for any other purpose.

(d) Proposed changes to the approved post-closure plans may be submitted to the commissioner during the post-closure period. The commissioner shall provide notification that the modification is not acceptable within sixty (60) days of receiving the modification request. If the owner or operator does not receive notification from the commissioner within sixty (60) days, the post-closure plan modifications may be installed in accordance with documentation provided to the commissioner. (*Solid Waste Management Board; 329 IAC 10-23-3; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1887; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2816; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3864*)

SECTION 92. 329 IAC 10-23-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-23-4 Post-closure certification

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4. When the post-closure care requirements of this rule have been completed, the owner, operator, or permittee shall submit a certification statement signed by the owner, operator, or permittee and an independent registered professional engineer that the post-closure care requirements have been met and the MSWLF has stabilized. The post-closure certification will be deemed adequate, unless within ~~one hundred fifty (150)~~ **ninety (90)** days of receipt of the post-closure certification and subsequent review, the commissioner issues notice of the deficiency of post-closure, including actions necessary to correct the deficiency. (*Solid Waste Management Board; 329 IAC 10-23-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1887; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3865*)

SECTION 93. 329 IAC 10-24-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-24-4 Hydrogeologic study

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4. (a) An application for restricted waste site Type I or Type II or nonmunicipal solid waste landfill must be accompanied by a proposal for the installation of monitoring devices, upgradient and downgradient from the landfill with respect to ground water flow direction. The proposal must consist of a hydrogeologic study that provides the information specified in subsection (b). The commissioner may modify the requirements for the proposal dependent on site characteristics. The proposal must be certified by a registered professional engineer or ~~certified~~ **licensed** professional geologist, either of whom shall have education or professional experience in hydrogeology or hydrology.

(b) The proposal must provide the following information by means of maps, diagrams, and narrative:

- (1) Summary of regional and site-specific geologic information obtained from recent or previous soil borings, coal borings, area **ground water monitoring** well logs, and published reports.
- (2) Water table and potentiometric surface maps of the proposed site, including ground water flow directions as follows:

(A) Such maps must be prepared from data from cased holes or piezometers capable of measuring hydraulic head at a maximum screen interval of five (5) feet. This limitation on the maximum length of the screened interval must not apply to those piezometers used to determine a water table surface. At least:

- (i) three (3) such devices must be necessary for fill areas less than twenty (20) acres;
- (ii) four (4) such devices for fill areas between twenty (20) and fifty (50) acres;
- (iii) five (5) such devices for fill areas between fifty (50) and ninety (90) acres; and
- (iv) six (6) such devices for fill areas greater than ninety (90) acres.

The required devices must be evenly distributed over the site. In addition, vertical hydraulic gradients must be measured, at a minimum, of two (2) separate points at the site. Additional nested piezometers or **ground water monitoring** wells may be required by the commissioner to adequately determine vertical components. When more than one (1) aquifer is present within the specified boring depths required in section 3(1)(C) of this rule, individual water table and potentiometric maps may be required.

(B) Monthly water level measurements over a period of at least six (6) months, along with water table and potentiometric surface maps constructed from each measurement event, must be submitted to the commissioner prior to operation of the facility.

(C) The proposal must discuss the evidence and potential of significant components of vertical ground water flow. If there are significant components of vertical flow, cross-sectional representations of equipotential lines and ground water flow direction must be provided that adequately represent the flow beneath the site.

- (3) Identification of aquifers below the proposed site to the depth required by section 3(1)(C) of this rule, including the following information:

- (A) Aquifer thickness or thicknesses.
- (B) Lithology.
- (C) Estimated hydraulic conductivity and effective porosity.
- (D) Presence of low permeability units above or below.
- (E) Whether the aquifers are confined or unconfined.

In addition, a general identification and description must be provided for aquifers known to exist from the geologic literature and area **ground water monitoring** well logs.

- (4) Known or projected information on hydraulic connections of ground water to surface water and hydraulic connections between different aquifers at site.
- (5) Information on the current and proposed use of ground water in the area, including any available information on existing quality of ground water in the aquifer or aquifers.
- (6) Diagrammatic representation of proposed **ground water** monitoring well design and construction, including any available information on existing quality of ground water in the aquifer or aquifers.
- (7) Proposed **ground water monitoring** well locations, including length and elevation of screened intervals.

(c) The commissioner may require that pumping tests or similar hydraulic tests be performed to provide a more accurate determination of aquifer characteristics where necessary to determine the adequacy of site or monitoring system design. (*Solid Waste Management Board; 329 IAC 10-24-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1890; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535*)

SECTION 94. 329 IAC 10-29-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-29-1 Monitoring devices

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 1. (a) All new restricted waste sites Type I and Type II and nonmunicipal solid waste landfills must have ground water monitoring devices. All existing nonmunicipal solid waste landfills in operation on the effective date of 329 IAC 2, which was repealed in 1996, that do not have ground water monitoring devices must install such devices on or before September 1, 1989.

(b) The number and location of monitoring devices are as follows:

(1) The following for new facilities:

- (A) The ground water monitoring system must consist of a sufficient number of monitoring devices, installed at appropriate locations and depths, to yield ground water samples from the aquifer or aquifers that represent the quality of both background water that has not been affected by leachate from a facility and the quality of ground water passing the monitoring boundary of the facility. If the aquifer to be monitored exceeds the depth specified in 329 IAC 10-24-3(1)(C), the commissioner may allow alternative placement of monitoring devices.
- (B) The number, spacing, and depths of monitoring devices must be proposed by the applicant in the site-specific geological study required under 329 IAC 10-24.
- (C) A minimum of four (4) ground water monitoring devices, one (1) upgradient and three (3) downgradient, must be installed.

(2) For existing facilities under subsection (a), as follows:

- (A) A minimum of four (4) ground water monitoring devices, one (1) upgradient and three (3) downgradient, must be installed at facilities that do not have an existing ground water monitoring system that meets the requirements of the commissioner.
- (B) Locations and installation of monitoring devices must be in accordance with a plan submitted to and approved by the commissioner.

(c) The commissioner may request notification in advance of the date and time of the installation of the monitoring devices.

(d) The owner or operator of a restricted waste site Type I or Type II or nonmunicipal solid waste landfill shall prepare and submit to the commissioner at least annually a ground water flow map or maps as necessary to indicate seasonal ground water. If data acquired during operation of the facility indicates that ground water flow directions are other than as anticipated in the ground water monitoring system design, the commissioner may require additional **ground water** monitoring wells at the facility.

(e) If for any reason a **ground water** monitoring well or other monitoring device is destroyed or otherwise fails to properly function, the owner or operator of a restricted waste site Type I or Type II or nonmunicipal solid waste landfill shall notify the commissioner within ten (10) days of discovery. The device must be repaired if possible. If the device cannot be repaired, it must be properly abandoned and replaced within sixty (60) days of the notification unless the owner or operator is notified otherwise in writing by the commissioner.

(f) As used in this rule, “monitoring devices” includes the following:

- (1) Ground water monitoring wells.
- (2) Suction lysimeters.
- (3) Moisture probes.
- (4) Similar monitoring devices.

(g) As used in this rule, “monitoring boundary of the facility” means the vertical plane provided by the monitoring devices hydraulically downgradient from the facility. The downgradient monitoring devices that constitute the monitoring boundary of the facility must be located within fifty (50) feet of the solid waste boundary or the property line, whichever is closer to the solid waste boundary, except where fifty (50) feet is not possible because of site topography or geology. In the case of existing facilities that have ground water monitoring devices approved by the commissioner prior to the effective date of this article, those approved devices must define the monitoring boundary of the facility. (*Solid Waste Management Board; 329 IAC 10-29-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1900; errata filed Apr 4, 1996, 4:00 p.m.: 19 IR 2047; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535*)

SECTION 95. 329 IAC 10-30-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-30-4 Closure plan

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4. (a) Owners or operators of restricted waste sites Type I and Type II and nonmunicipal solid waste landfills shall have a written closure plan. The closure plan must be submitted with the permit application in accordance with 329 IAC 10-11 and be approved by the commissioner as part of the permit. The approved closure plan will become a condition of the permit.

(b) The closure plan must identify the steps necessary to completely close the restricted waste site Type I or Type II or nonmunicipal solid waste landfill at any point during its intended life in accordance with section 1 of this rule. The plan must be certified by a registered professional engineer. The closure plan must include the following:

- (1) A description of the steps that will be used to partially close, if applicable, and finally close the facility in accordance with section 1 of this rule.
- (2) A listing of labor, materials, and testing necessary to close the facility.
- (3) An estimate of the expected year of closure and a schedule for final closure. The schedule must include:
 - (A) the total time required to close the facility; and
 - (B) the time required for completion of intervening closure activities.
- (4) An estimate of the cost per acre of providing final cover and vegetation. Such cost must be that which is necessary for providing the following, but must not be less than five thousand dollars (\$5,000) per acre:
 - (A) Two (2) feet of compacted clay soil.
 - (B) Six (6) inches of topsoil.
 - (C) Vegetation.

(D) Certification of closure, including any testing necessary for such certification.

(5) The closure plan must separately identify any closure costs for items other than providing final cover and vegetation.

(6) The closure plan must list a closure cost estimate equal to the costs specified by subdivision (5) plus the product of the total area of the site permitted for filling and the cost per unit area specified by subdivision (4). Closure costs must be calculated based on the cost necessary for the work to be performed by a third party.

(7) The estimate of the cost per acre of providing final cover and vegetation must be that necessary for providing the activities as specified in the closure plan; however, the sum of the closure cost estimate and post-closure cost estimate must not be less than fifteen thousand dollars (\$15,000) per acre or fraction of an acre covered by the permitted facility.

(8) If the restricted waste site Type I or Type II or nonmunicipal solid waste landfill utilizes the **incremental** closure ~~trust fund option or funds the letter of credit on an annual basis; standard~~, as contained in ~~329 IAC 10-39-2~~, **329 IAC 10-39-2(b)(3)(B)**, then for each yearly period following the beginning of operation of the facility, the plan must specify the maximum area of the facility into which solid waste will have been deposited through that year of the facility's life and must delineate such areas on the copy of the facility's final contour map. The closure plan must list closure cost estimates for each year of the anticipated life of the facility equal to the costs specified by subdivision (5), plus the product of the noted maximum areas of the site and the cost per unit area specified by subdivision (4).

(Solid Waste Management Board; 329 IAC 10-30-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1906; readopted filed Jan 10, 2001, 3:25 p.m.: 24 IR 1535)

SECTION 96. 329 IAC 10-37-4 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-37-4 Closure plan

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 4. (a) Owners or operators of a restricted waste site Type III and a construction/demolition site shall have a written closure plan. The closure plan must be submitted with the permit application in accordance with 329 IAC 10-11 and be approved by the commissioner as part of the permit. The approved closure plan will become a condition of the permit.

(b) The closure plan, certified by a registered professional engineer, must identify the steps necessary to completely close the restricted waste site Type III or construction/demolition site at any point during its intended life in accordance with section 1 of this rule. The closure plan must include the following:

(1) A description of the steps that will be used to partially close, if applicable, and finally close the facility in accordance with section 1 of this rule.

(2) A listing of labor, materials, and testing necessary to close the facility.

(3) An estimate of the expected year of closure and a schedule for final closure. The schedule must include:

(A) the total time required to close the facility; and

(B) the time required for completion of intervening closure activities.

(4) An estimate of the cost per acre of providing final cover and vegetation. Such cost must be that which is necessary for providing the following, but must not be less than five thousand dollars (\$5,000) per acre:

(A) Two (2) feet of compacted clay soil.

(B) Six (6) inches of topsoil.

(C) Vegetation.

(D) Certification of closure, including any testing necessary for such certification.

(5) The closure plan must separately identify any closure costs for items other than providing final cover and vegetation.

(6) The closure plan must list a closure cost estimate equal to the costs specified by subdivision (5) plus the product of the total area of the site permitted for filling and the cost per unit area specified by subdivision (4). Closure costs must be calculated based on the cost necessary for the work to be performed by a third party.

(7) The estimate of the cost per acre of providing final cover and vegetation must be that necessary for providing the activities as specified in the closure plan; however, the sum of the closure cost estimate and post-closure cost estimate must not be less than fifteen thousand dollars (\$15,000) per acre or fraction of an acre covered by the permitted facility.

(8) If the restricted waste site Type III or the construction/demolition site utilizes the **incremental closure trust fund option or funds the letter of credit on an annual basis standard**, as contained in ~~329 IAC 10-39~~; **329 IAC 10-39-2(b)(3)(B)**, then for each yearly period following the beginning of operation of the facility, the plan must specify the maximum area of the facility into which solid waste will have been deposited through that year of the facility's life and must delineate such areas on the copy of the facility's final contour map. The closure plan must list closure cost estimates for each year of the anticipated life of the facility equal to the costs specified by subdivision (5), plus the product of the noted maximum areas of the site and the cost per unit area specified by subdivision (4).

(Solid Waste Management Board; 329 IAC 10-37-4; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1916)

SECTION 97. 329 IAC 10-39-1 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-1 Applicability

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 1. (a) This rule applies to all solid waste land disposal facilities that:

(1) are required to have a permit by 329 IAC 10-11-1; and

(2) apply for a permit after the promulgation of this rule or have an operating permit in effect on the effective date of this article.

(b) The permittee for solid waste land disposal facilities regulated by this rule shall provide financial responsibility for closure and post-closure in accordance with the following:

(1) Closure and post-closure rules, including:

(A) 329 IAC 10-22 and 329 IAC 10-23;

(B) 329 IAC 10-30 and 329 IAC 10-31; or

(C) 329 IAC 10-37 and 329 IAC 10-38.

(2) Sections 2 through 5 of this rule.

(c) Solid waste land disposal facilities that have operating permits in effect must not continue to operate unless they have established financial responsibility for post-closure by choosing a financial assurance mechanism under section 3(a) of this rule and by funding the same under section 3(b) of this rule.

(d) Solid waste land disposal facilities that have operating permits in effect must not continue to operate unless they have established financial responsibility for closure by choosing a financial assurance mechanism under section 2(a) of this rule and by funding the same under section 2(b) of this rule.

(e) Solid waste land disposal facilities that apply for permits after the promulgation of this rule must provide financial responsibility as required by ~~329 IAC 10-11-2(b)(12)~~; **329 IAC 10-11-2.5(a)(4)**. The documents establishing both the closure and post-closure financial responsibility must be executed by and approved by the commissioner prior to operation of the facility. In addition, the financial assurance mechanism must be funded under sections 2(b) and 3(b) of this rule prior to operation. *(Solid Waste Management Board; 329 IAC 10-39-1; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1918)*

SECTION 98. 329 IAC 10-39-2 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-2 Closure; financial responsibility

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 2. (a) The permittee shall establish financial responsibility for closure of the solid waste land disposal facility. The permittee shall choose from the following options:

(1) The trust fund option, including the following:

(A) The permittee may satisfy the requirements of this section by establishing a trust agreement on forms provided by the commissioner or on such other form as approved by the commissioner.

(B) All trust agreements must contain the following:

(i) Identification of solid waste land disposal facilities and corresponding closure cost estimates covered by the trust agreement.

(ii) The establishment of a trust fund in the amount determined by subsection (b) and guarantee payments from that fund either reimbursing the permittee for commissioner-approved closure work done or making payments to the commissioner for accomplishing required closure work.

(iii) The requirement of annual evaluations of the trust to be submitted to the commissioner.

(iv) The requirement of successor trustees to notify the commissioner, in writing, of their appointment at least ten (10) days prior to the appointment becoming effective.

(v) The requirement of the trustee to notify the commissioner, in writing, of the failure of the permittee to make a required payment into the fund.

(vi) The establishment that the trust is irrevocable unless terminated, in writing, with the approval of the permittee, the trustee, and the commissioner.

(vii) A certification that the signatory of the trust agreement for the permittee was duly authorized to bind the permittee.

(viii) A notarization of all signatures by a notary public commissioned to be a notary public in the state of Indiana at the time of notarization.

(ix) The establishment that the trustee is authorized to act as a trustee and is an entity whose operations are regulated and examined by a federal and state of Indiana agency.

(x) The requirement of initial payment into the fund be made within thirty (30) days of the commissioner's approval of the trust agreement, and any subsequent payments be made within thirty (30) days of each anniversary of the initial payment.

(2) The surety bond option, including the following:

(A) The permittee may satisfy the requirements of this section by establishing a surety bond on forms provided by the commissioner or on such other forms as approved by the commissioner.

(B) All surety bonds must contain the following:

(i) The establishment of penal sums in the amount determined by subsection (b).

(ii) Provision that the surety will be liable to fulfill the permittee's closure obligations upon notice from the commissioner that the permittee has failed to do so.

(iii) Provision that the surety may not cancel the bond without first sending notice of cancellation by certified mail to the permittee and the commissioner at least one hundred twenty (120) days prior to the effective date of the cancellation.

(iv) Provision that the permittee may not terminate the bond without prior written authorization by the commissioner.

(C) The permittee shall establish a standby trust fund to be utilized in the event the permittee fails to fulfill closure obligations and the bond guarantee is exercised. Such trust fund must be established in accordance with the requirements of subdivision (1).

(D) The surety company issuing the bond must be among those listed as acceptable sureties for federal bonds in Circular 570 of the United States Department of the Treasury **and must be authorized to do business in the state of Indiana.**

(E) The surety will not be liable for deficiencies in the performance of closure by the permittee after the commissioner releases the permittee in accordance with section 6 of this rule.

(3) The letter of credit option, including the following:

(A) The permittee may satisfy the requirements of this section by establishing a letter of credit on forms provided by the commissioner or on such other forms as approved by the commissioner.

(B) All letters of credit must contain the following:

- (i) The establishment of credit in the amount determined by subsection (b).
 - (ii) Irrevocability.
 - (iii) An effective period of at least one (1) year and automatic extensions for periods of at least one (1) year unless the issuing institution provides written notification of cancellation by certified mail to both the permittee and the commissioner at least one hundred twenty (120) days prior to the effective date of cancellation.
 - (iv) Provision that, upon written notice from the commissioner, the institution issuing the letter of credit will state that the permittee's obligations have not been fulfilled, and the institution will deposit funds equal to the amount of the letter of credit into a trust fund to be used to ensure the permittee's closure obligations are fulfilled.
- (C) The permittee shall establish a standby trust fund to be utilized in the event the permittee fails to fulfill its closure obligations and the letter of credit is utilized. Such trust funds must be established in accordance with the requirements of subdivision (1).
- (D) The issuing institution must be an entity that has the authority to issue letters of credit and whose letters of credit operations are regulated and examined by a federal or Indiana agency.
- (4) The insurance option, including the following:
- (A) The permittee may satisfy the requirements of this section by providing evidence of insurance on forms provided by the commissioner or on such other forms as approved by the commissioner.
 - (B) All insurance must include the following requirements:
 - (i) Be in the amount determined by subsection (b).
 - (ii) Provide that, upon written notification to the insurer by the commissioner that the permittee has failed to perform final closure, the insurer shall make payments in any amount, not to exceed the amount insured, and to any person authorized by the commissioner.
 - (iii) Provide that the permittee shall maintain the policy in full force and effect unless the commissioner consents in writing to termination of the policy.
 - (iv) Provide for assignment of the policy to a transferee permittee.
 - (v) Provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure of the permittee to pay the premium. No policy may be canceled, be terminated, or fail to be renewed unless at least one hundred twenty (120) days prior to such event the commissioner and the permittee are notified by the insurer in writing.
 - (C) The insurer shall either be licensed to transact the business of insurance or be eligible to provide insurance as an excess or surplus lines insurer in one (1) or more states.
- (5) The financial test for restricted waste sites option, including the following:
- (A) This financial test is only available for restricted waste sites.
 - (B) If a permittee meets the criteria set forth in item (i) and either item (ii) or (iii), the permittee shall be deemed to have established financial responsibility as follows:
 - (i) Less than fifty percent (50%) of the company's gross revenues are derived from waste management.
 - (ii) The permittee meets the following four (4) tests:
 - (AA) Two (2) of the following three (3) ratios are met:
 - (aa) A ratio of total liabilities to net worth less than two (2.0).
 - (bb) A ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than one-tenth (0.1).
 - (cc) A ratio of current assets to current liabilities greater than one and one-half (1.5).
 - (BB) Net working capital and tangible net worth each at least six (6) times the sum of the current closure and current post-closure cost estimates.
 - (CC) Tangible net worth of at least ten million dollars (\$10,000,000).
 - (DD) Assets in the United States amounting to at least ninety percent (90%) of the permittee's total assets or at least six (6) times the sum of the current closure and current post-closure costs estimates.
 - (iii) The permittee meets the following four (4) tests:
 - (AA) A current rating for the permittee's most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's.

- (BB) Tangible net worth of at least six (6) times the sum of the current closure and current post-closure cost estimates.
- (CC) Tangible net worth of at least ten million dollars (\$10,000,000).
- (DD) Assets located in the United States amounting to at least ninety percent (90%) of the permittee's total assets or at least six (6) times the sum of the current closure and current post-closure estimates.
- (C) To demonstrate the financial test has been met, the permittee shall submit the following documents to the commissioner:
 - (i) A form provided by the commissioner, or such other form as approved by the commissioner, signed by the permittee's chief financial officer, demonstrating the applicable criteria have been met.
 - (ii) A copy of an independent certified public accountant's report examining the permittee's financial statements for the latest completed fiscal year.
 - (iii) A special report from the permittee's independent certified public accountant to the permittee stating:
 - (AA) the certified public accountant has compared the data that the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and
 - (BB) in connection with that procedure, no matters come to the attention of the certified public accountant that caused the certified public accountant to believe that the specified data should be adjusted.
- (D) The permittee shall submit updated clause (C) documents to the commissioner within ninety (90) days after the close of each fiscal year.
- (E) If at any time the permittee fails to meet the financial test, the permittee shall establish an alternate financial responsibility mechanism within one hundred twenty (120) days after the end of the fiscal year for which the year-end financial data shows that the permittee no longer meets the requirements.
- (F) The commissioner may disallow use of this test on the basis of qualifications in the opinion expressed in the independent certified public accountant's report examining the permittee's financial statements. An adverse opinion or a disclaimer of opinion will be cause for disallowance. Other qualifications may be cause for disallowance if, in the opinion of the commissioner, they indicate the permittee does not meet the requirements of this subdivision. The permittee shall choose an alternate financial responsibility mechanism within thirty (30) days after notification of the disallowance.
- (6) The local government financial test option, including the following:
 - (A) This financial test is only available for permittees that are local governments. As used in this subdivision, "local government" means a county, municipality, township, or solid waste management district.
 - (B) A local government permittee that satisfies the following requirements may demonstrate financial assurance up to the amount specified in clause (C):
 - (i) The local government permittee shall meet the following financial component requirements:
 - (AA) The local government permittee shall satisfy either of the following as applicable:
 - (aa) If the local government permittee has outstanding, rated general obligation bonds that are not secured by insurance, a letter of credit, or other collateral or guarantee, the local government permittee shall have a current rating of:
 - (1) Aaa, Aa, A, or Baa as issued by Moody's; or
 - (2) AAA, AA, A, or BBB as issued by Standard and Poor's;
 - on all such general obligation bonds.
 - (bb) The local government permittee shall satisfy the following financial ratios based on the local government permittee's most recent audited annual financial statement:
 - (1) A ratio of cash plus marketable securities to total expenditures greater than or equal to five-hundredths (0.05).
 - (2) A ratio of annual debt service to total expenditures less than or equal to two-tenths (0.20).
 - (BB) The local government permittee shall prepare the local government permittee's financial statements in conformity with generally accepted accounting principles (GAAP) for governments and have the financial statements audited by an independent certified public accountant or the state board of accounts.
 - (CC) A local government permittee is not eligible to assure the local government permittee's obligations under this subdivision if any of the following applies to the local government permittee:
 - (aa) The local government permittee is currently in default on any outstanding general obligation bonds.

- (bb) The local government permittee has any outstanding general obligation bonds rated lower than Baa as issued by Moody's or BBB as issued by Standard and Poor's.
- (cc) The local government permittee has operated at a deficit equal to five percent (5%) or more of total annual revenue in each of the past two (2) fiscal years.
- (dd) The local government permittee receives an adverse opinion, disclaimer of opinion, or other qualified opinion from the independent certified public accountant or the state board of accounts auditing its financial statement as required under subitem (BB). The commissioner may evaluate qualified opinions on a case-by-case basis and allow use of the financial test in cases where the commissioner deems the qualification insufficient to warrant disallowance of use of the test.
- (DD) As used in this subdivision, the following terms apply:
 - (aa) "Cash plus marketable securities" means all the cash plus marketable securities held by the local government permittee on the last day of a fiscal year, excluding cash and marketable securities designated to satisfy past obligations, such as pensions.
 - (bb) "Debt service" means the amount of principal and interest due on a loan in a given time period, typically the current year.
 - (cc) "Deficit" means total annual revenues minus total annual expenditures.
 - (dd) "Total expenditures" means all expenditures, excluding capital outlays and debt repayment.
 - (ee) "Total revenues" means revenues from all taxes and fees but does not include the proceeds from borrowing or asset sales, excluding revenues from funds managed by the local government permittee on behalf of a specific third party.
- (ii) The local government permittee shall meet the following public notice component requirements:
 - (AA) The local government permittee shall place a reference to the closure and post-closure care costs assured through the financial test into the local government permittee's next comprehensive annual financial report (CAFR) at the time of the next required local government financial test annual submittal or prior to the initial receipt of waste at the facility, whichever is later. Disclosure must include the following:
 - (aa) Nature and source of closure and post-closure care requirements.
 - (bb) Reported liability at the balance sheet date.
 - (cc) Estimated total closure and post-closure care cost remaining to be recognized.
 - (dd) Percentage of landfill capacity used to date.
 - (ee) Estimated landfill life in years.
 - (BB) A reference to corrective action costs must be placed in the CAFR not later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with the requirements of 329 IAC 10-21-13.
 - (CC) For the first year the financial test is used to assure costs at a particular facility, the reference may instead be placed in the facility's operating record until issuance of the next available CAFR if timing does not permit the reference to be incorporated into the most recently issued CAFR or budget.
 - (DD) For closure and post-closure costs, conformance with Government Accounting Standards Board Statement 18 assures compliance with this public notice component.
- (iii) The local government permittee shall meet the following record keeping and reporting requirements:
 - (AA) The local government permittee shall place the following items in the facility's operating record:
 - (aa) A letter signed by the local government permittee's chief financial officer that completes the following:
 - (1) Lists all of the current cost estimates covered by a financial test as described in clause (C).
 - (2) Provides evidence and certifies that the local government permittee meets the conditions of item (i)(AA), (i)(BB), and (i)(CC).
 - (3) Certifies that the local government permittee meets the conditions of item (ii) and clause (C).
 - (bb) The local government permittee's independently audited year-end financial statements for the latest fiscal year (except for local government permittees where audits are required every two (2) years when unaudited statements may be used in years when audits are not required), including the unqualified opinion of the auditor, who shall be an independent certified public accountant, or the state board of accounts that conducts equivalent comprehensive audits.

(cc) A report to the local government permittee from the local government permittee's independent certified public accountant or the state board of accounts based on performing an agreed upon procedures engagement relative to the:

- (1) financial ratios required by item (i)(AA)(bb), if applicable; and
- (2) requirements of item (i)(BB), (i)(CC)(cc), and (i)(CC)(dd).

The independent certified public accountant's or state board of accounts' report must state the procedures performed and the findings.

(dd) A copy of the CAFR used to comply with item (ii) or certification that the requirements of General Accounting Standards Board Statement 18 have been met.

(BB) The items required in subitem (AA) must be placed in the facility operating record as follows:

(aa) In the case of closure and post-closure care, either at the time of the next required local government financial test annual submittal or prior to the initial receipt of waste at the facility, whichever is later.

(bb) In the case of corrective action, not later than one hundred twenty (120) days after the corrective action remedy is selected in accordance with the requirements of 329 IAC 10-21-13.

(CC) After the initial placement of the items in the facility's operating record, the local government permittee shall update the information and place the updated information in the operating record within one hundred eighty (180) days following the close of the local government permittee's fiscal year.

(DD) The local government permittee is no longer required to meet the requirements of this item when either of the following occur:

(aa) The local government permittee substitutes alternate financial assurance as specified in this rule.

(bb) The local government permittee is released from the requirements of this rule in accordance with section 6 or 11 of this rule.

(EE) A local government permittee shall satisfy the requirements of the financial test at the close of each fiscal year. If the local government permittee no longer meets the requirements of the local government financial test, the local government permittee shall, within one hundred twenty (120) days following the close of the local government permittee's fiscal year, complete the following:

(aa) Obtain alternative financial assurance that meets the requirements of this rule.

(bb) Place the required submissions for that assurance in the facility's operating record.

(cc) Notify the commissioner that the local government permittee no longer meets the criteria of the financial test and that alternate assurance has been obtained.

(FF) The commissioner, based on a reasonable belief that the local government permittee may no longer meet the requirements of the local government financial test, may require additional reports of financial condition from the local government permittee at any time. If the commissioner finds, on the basis of such reports or other information, that the local government permittee no longer meets the requirements of the local government financial test, the local government permittee shall provide alternate financial assurance in accordance with this rule.

(GG) The commissioner may disallow use of this test on the basis of qualifications in the opinion expressed in the state board of accounts' annual financial audit of the local government permittee. An adverse opinion or a disclaimer of opinion is cause for disallowance. Other qualifications may be cause for disallowance if, in the opinion of the commissioner, the qualifications indicate the local government permittee does not meet the requirements of this subdivision. The local government permittee shall choose an alternate financial responsibility mechanism within ninety (90) days after notification of the disallowance.

(C) The local government permittee shall complete the calculation of costs to be assured. The portion of the closure, post-closure, and corrective action costs for which a local government permittee can assure under this subdivision is determined as follows:

(i) If the local government permittee does not assure other environmental obligations through a financial test, the local government permittee may assure closure, post-closure, and corrective action costs that equal up to forty-three percent (43%) of the local government permittee's total annual revenue.

(ii) If the local government permittee assures other environmental obligations through a financial test, including those associated with:

(AA) underground injection control (UIC) facilities under 40 CFR 144.62;

(BB) petroleum underground storage tank facilities under 329 IAC 9-8;

- (CC) polychlorinated biphenyls (PCB) storage facilities under 40 CFR 761; and
 - (DD) hazardous waste treatment, storage, and disposal facilities under 329 IAC 3.1-14 or 329 IAC 3.1-15;
- the local government permittee shall add those costs to the closure, post-closure, and corrective action costs the local government permittee seeks to assure under this subdivision. The total that may be assured must not exceed forty-three percent (43%) of the local government permittee's total annual revenue.
- (iii) The local government permittee shall obtain an alternate financial assurance instrument for those costs that exceed the limits set in this clause.
- (7) The local government guarantee option, including the following:
- (A) A permittee may demonstrate financial assurance for closure, post-closure, and corrective action, as required by sections 2, 3, and 10 of this rule, by obtaining a written guarantee provided by a local government.
 - (B) The guarantor shall meet the requirements of the local government financial test in subdivision (6) and shall comply with the terms of a written guarantee as follows:
 - (i) The guarantee must be effective:
 - (AA) before the initial receipt of waste or at the time of the next required local government financial test annual submittal, whichever is later, in the case of closure and post-closure care; or
 - (BB) no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with the requirements of 329 IAC 10-21-13.
 - (ii) The guarantee must provide the following:
 - (AA) If the permittee fails to perform any combination of closure, post-closure care, or corrective action of a facility covered by the guarantee, the guarantor shall:
 - (aa) perform or pay a third party to perform any combination of closure, post-closure care, or corrective action as required under this subitem; or
 - (bb) establish a fully funded trust fund as specified in subdivision (1) in the name of the permittee.
 - (BB) The guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the permittee and to the commissioner. Cancellation must not occur during the one hundred twenty (120) days beginning on the date of receipt of the notice of cancellation by both the permittee and the commissioner as evidenced by the return receipts.
 - (CC) If a guarantee is canceled under subitem (BB), the permittee shall, within ninety (90) days following receipt of the cancellation notice by the permittee and the commissioner, complete the following:
 - (aa) Obtain alternate financial assurance under this rule.
 - (bb) Place evidence of that alternate financial assurance in the facility operating record.
 - (cc) Notify the commissioner.
 - (DD) If the permittee fails to provide alternate financial assurance within the ninety (90) day period under subitem (CC), the guarantor shall complete the following:
 - (aa) Provide alternate assurance within one hundred twenty (120) days following the guarantor's notice of cancellation.
 - (bb) Place evidence of the alternate assurance in the facility operating record.
 - (cc) Notify the commissioner.
 - (C) The permittee shall complete the following record keeping and reporting requirements:
 - (i) The permittee shall place a certified copy of the guarantee along with the items required under subdivision (6)(B)(iii) into the facility's operating record:
 - (AA) before the initial receipt of waste or at the time of the next required local government financial test annual submittal, whichever is later, in the case of closure and post-closure care; or
 - (BB) no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.
 - (ii) The permittee is no longer required to maintain the items specified in this clause when:
 - (AA) the permittee substitutes alternate financial assurance as specified in this rule; or
 - (BB) the permittee is released from the requirements of this rule in accordance with section 6 or 11 of this rule.
 - (iii) If a local government guarantor no longer meets the requirements of subdivision (6), the permittee shall, within ninety (90) days, complete the following:
 - (AA) Obtain alternative assurance.

(BB) Place evidence of the alternate assurance in the facility operating record.

(CC) Notify the commissioner.

If the permittee fails to obtain alternate financial assurance within the ninety (90) day period, the guarantor shall provide that alternate assurance within the next thirty (30) days.

(b) Financial responsibility closure cost estimate requirements must be as follows:

(1) For purposes of establishing financial responsibility, the permittee shall have a detailed written estimate of the cost of closing the facility based on the following:

(A) The closure costs derived under:

(i) 329 IAC 10-22-2(c);

(ii) 329 IAC 10-30-4(b); or

(iii) 329 IAC 10-37-4(b).

(B) One (1) of the closure cost estimating standards under subdivision (3).

(2) As used in this section, "establishment of financial responsibility" means submission of financial responsibility to the commissioner in the form of one (1) of the options under subsection (a).

(3) The permittee shall use one (1) of the following closure cost estimating standards:

(A) The entire solid waste land disposal facility closure standard is an amount that equals the estimated total cost of closing the entire solid waste land disposal facility, less an amount representing portions of the solid waste land disposal facility that have been certified for partial closure in accordance with:

(i) 329 IAC 10-22-3;

(ii) 329 IAC 10-30-5; or

(iii) 329 IAC 10-37-5.

(B) The incremental closure standard is an amount which, for any year of operation, equals the total cost of closing the portion of the solid waste land disposal facility dedicated to the current year of solid waste land disposal facility operation, plus all closure amounts from all other partially or completely filled portions of the solid waste land disposal facility from prior years of operation that have not yet been certified for partial closure in accordance with:

(i) 329 IAC 10-22-3;

(ii) 329 IAC 10-30-5; or

(iii) 329 IAC 10-37-5.

(c) Until final closure of the solid waste land disposal facility is certified, the permittee shall annually review and submit to the commissioner the financial closure estimate derived under this section within thirty (30) days after the annual submittal date. The funding must be established or updated within thirty (30) days after the original effective date of the establishment of responsibility for closure. The funding must be updated within thirty (30) days after the annual submittal date. The submittal must also include a copy of the final contour map of the solid waste land disposal facility that delineates the boundaries of all areas into which waste has been placed as of the annual review and certified by a registered professional engineer or registered land surveyor. In addition, as part of the annual review, the permittee shall revise the closure estimate as follows:

(1) For inflation, using an inflation factor derived from the annual implicit price deflator for gross national product as published by the United States Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year as follows:

(A) The first revision is made by multiplying the original closure cost estimate by the inflation factor. The result is the revised closure cost estimate.

(B) Subsequent revisions are made by multiplying the latest revised closure cost estimate by the latest inflation factor.

(2) For changes in the closure plan, whenever such changes increase the cost of closure.

(d) The permittee may revise the closure cost estimate downward whenever a change in the closure plan decreases the cost of closure or whenever portions of the solid waste land disposal facility have been certified for partial closure under:

- (1) 329 IAC 10-22-3;
- (2) 329 IAC 10-30-5; or
- (3) 329 IAC 10-37-5.

(Solid Waste Management Board; 329 IAC 10-39-2; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1919; filed Mar 19, 1998, 11:07 a.m.: 21 IR 2817; filed Feb 26, 1999, 5:45 p.m.: 22 IR 2228; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3866; errata filed Sep 8, 1999, 11:38 a.m.: 23 IR 27)

SECTION 99. 329 IAC 10-39-3 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-3 Post-closure; financial responsibility

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 3. (a) The permittee shall establish financial responsibility for post-closure care of the solid waste land disposal facility. The permittee shall choose from the following options:

- (1) The trust fund option, including the following:
 - (A) The permittee shall establish a trust agreement on forms provided by the commissioner or on such other forms as approved by the commissioner.
 - (B) All trust agreements must conform to the requirements detailed in section 2(a)(1)(B) of this rule, with the exception that the term “post-closure” be substituted for the term “closure”.
- (2) The surety bond option, including the following:
 - (A) The permittee shall establish a surety bond on forms provided by the commissioner or on such other form as approved by the commissioner.
 - (B) All surety bonds must conform to the requirements detailed in section 2(a)(2)(B) through 2(a)(2)(E) of this rule, with the exception that the term “post-closure” be substituted for the term “closure”.
- (3) The letter of credit option, including the following:
 - (A) The permittee shall establish a letter of credit on forms provided by the commissioner or on such other forms as approved by the commissioner.
 - (B) All letters of credit must conform to the requirements detailed in section 2(a)(3)(B) through 2(a)(3)(D) of this rule, with the exception that the term “post-closure” be substituted for the term “closure”.
- (4) The insurance option, including the following:
 - (A) The permittee shall provide evidence of insurance on forms provided by the commissioner or on such other forms as approved by the commissioner.
 - (B) All insurance must conform to the requirements detailed in section 2(a)(4)(B) through 2(a)(4)(C) of this rule, with the exception that the term “post-closure” be substituted for the term “closure”.
- (5) The financial test for restricted waste sites option, including the following:
 - (A) This financial test is only available for restricted waste sites.
 - (B) If a permittee meets the criteria set forth in section 2(a)(5)(B) through 2(a)(5)(D) of this rule, the permittee shall be deemed to have established financial responsibility.
- (6) The local government financial test option, including the following:
 - (A) This financial test is only available for permittees that are local governments. As used in this subdivision, “local government” means a county, municipality, township, or solid waste management district.
 - (B) If a permittee meets the criteria set forth in section 2(a)(6)(B) through 2(a)(6)(C) of this rule, the permittee shall be deemed to have established financial responsibility.
 - (C) If, at any time, the permittee fails to meet the financial test, the permittee shall establish an alternate financial responsibility mechanism within one hundred twenty (120) days after the end of the fiscal year for which the financial data required by this clause shows that the permittee no longer meets the requirements.
 - (D) The commissioner may disallow use of this test on the basis of qualifications in the opinion expressed in the state board of accounts’ annual financial audit of the permittee. An adverse opinion or a disclaimer of opinion is cause for disallowance. Other qualifications may be cause for disallowance if, in the opinion of the commissioner, the qualifications indicate the permittee does not meet the requirements of this subdivision. The

permittee shall choose an alternate financial responsibility mechanism within ninety (90) days after notification of the disallowance.

(7) The local government guarantee option. If the local government guarantor and the permittee meet the requirements of section 2(a)(7)(B) and 2(a)(7)(C) of this rule, the permittee shall be deemed to have established financial responsibility.

(b) The permittee shall choose a financial responsibility mechanism that guarantees funds will be available to meet the post-closure requirements of the solid waste land disposal facility, including the following:

(1) Funding must equal the amount determined under:

(A) 329 IAC 10-23-3(c)(5) and 329 IAC 10-23-3(c)(6);

(B) 329 IAC 10-31-3(b)(4); or

(C) 329 IAC 10-38-3(b)(4).

(2) Funding may be accomplished by initially funding the chosen financial responsibility mechanism in an amount equal to the amount determined under:

(A) 329 IAC 10-23-3(c)(5) and 329 IAC 10-23-3(c)(6);

(B) 329 IAC 10-31-3(b)(4); or

(C) 329 IAC 10-38-3(b)(4).

(3) Funding may also be accomplished by making annual payments equal to the amount determined by the formula:

$$\text{Next Payment} = \frac{\text{CE} - \text{CV}}{Y}$$

Where:

CE = the current post-closure cost estimate

CV = the current value of the trust fund

Y = the number of years remaining in the pay-in period

Annual funding must be no later than thirty (30) days after either each annual anniversary date of the first payment into the mechanism or the establishment of the mechanism, if no payments are required.

(c) The permittee shall submit an annual update **for inflation and for changes in the post-closure plan, which increase the costs of post-closure**, within thirty (30) days after the annual submittal date to the commissioner regarding post-closure financial assurance until final closure certification. (*Solid Waste Management Board; 329 IAC 10-39-3; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1922; filed Feb 26, 1999, 5:45 p.m.: 22 IR 2235; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3871*)

SECTION 100. 329 IAC 10-39-7 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-7 Incapacity of permittee, guarantors, or financial institutions

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 7. (a) A permittee shall notify the commissioner by certified mail within ten (10) days after commencement of a voluntary or involuntary proceeding under bankruptcy under 11 U.S.C. 101 et seq., October 1, 1979, naming the permittee as debtor.

(b) A local government guarantor, which provides financial assurance to a permittee, shall notify the permittee and the commissioner by certified mail within ten (10) days after commencement of a voluntary or involuntary

proceeding under bankruptcy under 11 U.S.C. 101 et seq., October 1, 1979, naming the local government guarantor as debtor.

(c) A permittee who fulfills the requirements of sections 1 through 5 of this rule by obtaining a trust fund, surety bond, letter of credit, insurance policy, or local government guarantee ~~will~~ **shall** be deemed to be without the required financial responsibility in the event of bankruptcy of the:

- (1) trustee;
- (2) institution issuing the surety bond, letter of credit, or insurance policy to issue such instruments; or
- (3) local government guarantor.

The permittee shall establish other financial responsibility within sixty (60) days after such an event. (*Solid Waste Management Board; 329 IAC 10-39-7; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1924; filed Feb 26, 1999, 5:45 p.m.: 22 IR 2236*)

SECTION 101. 329 IAC 10-39-9 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-9 Release of funds

Authority: IC 13-14-8-7; IC 13-15-2-1; IC 13-19-3-1

Affected: IC 13-30-2; IC 36-9-30

Sec. 9. (a) This section applies to all permittees funding financial responsibility mechanisms under this rule whether utilizing the entire facility standard (section 2(b)(3)(A) of this rule) or the incremental standard (section 2(b)(3)(B) of this rule).

(b) Permittees may request release of closure or post-closure financial responsibility funds as follows:

(1) Closure as follows:

(A) Prior to closure of the solid waste land disposal facility, if payments have been made by the permittee as a part of establishing a financial responsibility mechanism, and if the payments total more than the required amount, the permittee may request, and the commissioner shall release the excess amount provided no refund must be made for an amount less than two thousand five hundred dollars (\$2,500). Such request for release must be made no more than once a year.

(B) After beginning final closure, a permittee or any other person authorized to perform closure may request reimbursement for closure expenditures by submitting itemized bills to the commissioner for a minimum of ten thousand dollars (\$10,000), **except after final closure certification approval**. However, the permittee must provide maps indicating the closure work that has been completed, and after expenditures for closures have been reimbursed, the remaining amount in the fund must be an adequate amount to complete the remainder of the closure work as required by the closure plan.

(2) Post-closure as follows:

(A) Prior to closure of the solid waste land disposal facility, if payments have been made by the permittee as a part of establishing a financial responsibility mechanism and if the payments total more than the required amount, the permittee may request, and the commissioner shall release the excess amount provided no refund must be made for an amount less than two thousand five hundred dollars (\$2,500). Such request for release must be made no more than once a year.

(B) During the period of post-closure care, the commissioner may approve a release of funds by an amount of not less than two thousand five hundred dollars (\$2,500) and not more than ~~ten~~ **three** percent (~~10%~~) (**3%**) of the current balance of the trust fund, **except after final post-closure certification approval**, if the permittee demonstrates to the commissioner that the value of the trust fund exceeds the remaining cost of post-closure care. Provided, however, that at no time must the value of the trust fund be allowed to drop below the remaining cost of post-closure care. Such requests for release must be made no more than once a year.

(c) Within thirty (30) days after receipt of a request for release of funds under subsection (b), the commissioner shall determine whether the expenditures are justified and, if so, shall instruct the trustee to make reimbursement in such amounts as the commissioner specifies in writing. If the commissioner determines that the cost of the closure

or post-closure will be significantly greater than the value of the trust fund, the commissioner may withhold reimbursement of such amounts as deemed prudent until it is determined that the permittee is no longer required to maintain the financial responsibility. (*Solid Waste Management Board; 329 IAC 10-39-9; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1924; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3873*)

SECTION 102. 329 IAC 10-39-10 IS AMENDED TO READ AS FOLLOWS:

329 IAC 10-39-10 Financial assurance for corrective action for municipal solid waste landfills

Authority: IC 13-14-8-7; IC 13-15; IC 13-19-3

Affected: IC 13-20; IC 36-9-30

Sec. 10. (a) The owner, operator, or permittee of each MSWLF required to undertake a corrective action program ~~under 329 IAC 10-21-13 for ground water impacts~~, shall establish financial assurance for the most recent corrective action program. The owner, operator, or permittee shall choose from the following options:

(1) The trust fund option, including the following:

(A) The owner, operator, or permittee shall demonstrate financial assurance for corrective action by obtaining a trust fund on forms provided by the commissioner or in such other form as approved by the commissioner.

(B) All trust funds must conform to the requirements detailed in section 2(a)(1)(B) of this rule, with the exception that the term “corrective action” be substituted for the term “closure”.

(2) The surety bond option, including the following:

(A) The owner, operator, or permittee shall demonstrate financial assurance for corrective action by obtaining a surety bond on forms provided by the commissioner or in such other form as approved by the commissioner.

(B) All surety bonds must conform to the requirements detailed in section 2(a)(2)(B) through 2(a)(2)(E) of this rule, with the exception that the term “corrective action” be substituted for the term “closure”.

(3) The letter of credit option, including the following:

(A) The owner, operator, or permittee shall demonstrate financial assurance for corrective action by obtaining a letter of credit on forms provided by the commissioner or in such other form as approved by the commissioner.

(B) All letters of credit must conform to the requirements detailed in section 2(a)(3)(B) through 2(a)(3)(D) of this rule, with the exception that the term “corrective action” be substituted for the term “closure”.

(4) The local government financial test option, including the following:

(A) This financial test is only available for owners, operators, or permittees that are local governments. As used in this subdivision, “local government” means a county, municipality, township, or solid waste management district.

(B) If an owner, operator, or permittee meets the criteria set forth in section 2(a)(6)(B) through 2(a)(6)(C) of this rule, the owner, operator, or permittee shall be deemed to have established financial responsibility.

(C) If, at any time, the owner, operator, or permittee fails to meet the financial test, the owner, operator, or permittee shall establish an alternate financial responsibility mechanism within one hundred twenty (120) days after the end of the fiscal year for which the financial data required by this clause shows that the owner, operator, or permittee no longer meets the requirements.

(D) The commissioner may disallow use of this test on the basis of qualifications in the opinion expressed in the state board of accounts’ annual financial audit of the owner, operator, or permittee. An adverse opinion or a disclaimer of opinion is cause for disallowance. Other qualifications may be cause for disallowance if, in the opinion of the commissioner, the qualifications indicate the owner, operator, or permittee does not meet the requirements of this subdivision. The owner, operator, or permittee shall choose an alternate financial responsibility mechanism within ninety (90) days after notification of the disallowance.

(5) The local government guarantee option. If the local government guarantor and the owner, operator, or permittee meet the requirements of section 2(a)(7)(B) and 2(a)(7)(C) of this rule, the owner, operator, or permittee shall be deemed to have established financial responsibility.

(b) The owner, operator, or permittee of an MSWLF shall choose a financial responsibility mechanism that guarantees funds will be available to meet the corrective action requirements under 329 IAC 10-21-13. The owner, operator, or permittee shall provide continuous coverage for corrective action until released from financial

assurance requirements for corrective action by demonstrating compliance with 329 IAC 10-21-13 and shall include the following, as applicable:

(1) Payments into the trust fund must be made annually by the owner, operator, or permittee over half of the estimated length of the corrective action program in the case of corrective action for known releases. This period is referred to as the pay-in period. For a trust fund used to demonstrate financial assurance for corrective action, the first payment into the trust fund must be at least equal to one-half (½) of the current cost estimate for corrective action divided by the number of years in the corrective action pay-in period. The amount of subsequent payments must be determined by the following formula:

$$\text{Next Payment} = \frac{\text{RB} - \text{CV}}{\text{Y}}$$

Where: RB = the most recent estimate of the required trust fund balance for corrective action (that is, the total costs that will be incurred during the second half of the corrective action period)

CV = the current value of the trust fund

Y = the number of years remaining in the pay-in period

The initial payment into the trust fund must be made no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.

(2) The surety bond must be effective no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.

(3) The letter of credit must be effective no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.

(4) The local government financial test must be effective no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.

(5) The local government guarantee must be effective no later than one hundred twenty (120) days after the corrective action remedy has been selected in accordance with 329 IAC 10-21-13.

(c) An owner, operator, or permittee of an MSWLF required to undertake a corrective action program ~~under 329 IAC 10-21-13~~ **for ground water impacts**, shall have a detailed written estimate, in current dollars, of the cost of hiring a third party to perform the corrective action in accordance with the program required under 329 IAC 10-21-13. The corrective action cost estimate must account for the total costs of corrective action activities as described in the corrective action plan for the entire corrective action period. The owner, operator, or permittee shall notify the commissioner that the estimate has been placed in the operating record. The owner, operator, or permittee shall do the following:

(1) Annually adjust the estimate for inflation until the corrective action program is completed in accordance with 329 IAC 10-21-13.

(2) Increase the corrective action cost estimate and the amount of financial assurance provided under subsections (a) and (b) if changes in the corrective action program or MSWLF conditions increase the maximum costs of corrective action.

The owner, operator, or permittee may reduce the amount of the corrective action cost estimate and the amount of financial assurance provided under subsections (a) and (b) if the cost estimate exceeds the maximum remaining costs of corrective action. The owner, operator, or permittee shall notify the commissioner that the justification for the reduction of the corrective action cost estimate and the amount of financial assurance has been placed in the operating record. (*Solid Waste Management Board; 329 IAC 10-39-10; filed Mar 14, 1996, 5:00 p.m.: 19 IR 1925; filed Feb 26, 1999, 5:45 p.m.: 22 IR 2236; filed Aug 2, 1999, 11:50 a.m.: 22 IR 3874*)

SECTION 103. THE FOLLOWING ARE REPEALED: 329 IAC 10-2-6; 329 IAC 10-2-29; 329 IAC 10-2-33; 329 IAC 10-2-53; 329 IAC 10-2-60; 329 IAC 10-2-76; 329 IAC 10-2-127; 329 IAC 10-2-128; 329 IAC 10-2-149; 329 IAC 10-2-177; 329 IAC 10-2-203; 329 IAC 10-2-205.